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The following abbreviations are used in volumes of the *Official Records of the World Health Organization*:

ACABQ	— Advisory Committee on Administrative and Budgetary Questions
ACAST	— Advisory Committee on the Application of Science and Technology to Development
ACC	— Administrative Committee on Coordination
CIOMS	— Council for International Organizations of Medical Sciences
DANIDA	— Danish International Development Agency
ECA	— Economic Commission for Africa
ECE	— Economic Commission for Europe
ECLA	— Economic Commission for Latin America
ECWA	— Economic Commission for Western Asia
ESCAP	— Economic and Social Commission for Asia and the Pacific
FAO	— Food and Agriculture Organization of the United Nations
IAEA	— International Atomic Energy Agency
IARC	— International Agency for Research on Cancer
IBRD	— International Bank for Reconstruction and Development
ICAO	— International Civil Aviation Organization
ILO	— International Labour Organisation (Office)
IMCO	— Inter-Governmental Maritime Consultative Organization
ITU	— International Telecommunication Union
OAU	— Organization of African Unity
PAHO	— Pan American Health Organization
PASB	— Pan American Sanitary Bureau
SIDA	— Swedish International Development Authority
UNCTAD	— United Nations Conference on Trade and Development
UNDP	— United Nations Development Programme
UNEP	— United Nations Environment Programme
UNESCO	— United Nations Educational, Scientific and Cultural Organization
UNFDAC	— United Nations Fund for Drug Abuse Control
UNFPA	— United Nations Fund for Population Activities
UNHCR	— Office of the United Nations High Commissioner for Refugees
UNICEF	— United Nations Children's Fund
UNIDO	— United Nations Industrial Development Organization
UNITAR	— United Nations Institute for Training and Research
UNRWA	— United Nations Relief and Works Agency for Palestine Refugees in the Near East
UNSCEAR	— United Nations Scientific Committee on the Effects of Atomic Radiation
USAID	— United States Agency for International Development
WFP	— World Food Programme
WHO	— World Health Organization
WMO	— World Meteorological Organization

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The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Where the designation "country or area" appears in the headings of tables, it covers countries, territories, cities or areas.

INTRODUCTION

The world scene in 1974 has been dominated by economic instability. Most of the industrialized countries have been experiencing a socioeconomic malaise that is without parallel in the postwar years, and this has had its repercussions on developing countries, even though some of them have seen a remarkable upswing in their potential development. Widespread inflation has led in certain countries to a severe cutback in public spending that threatens far-reaching consequences for the social services, and not least for the health services, where the effects have been exacerbated by steeply rising costs. International organizations have likewise been faced by reduced spending power, which has obliged them to look more closely than ever at their traditional programmes and to think more imaginatively about their future possibilities.

It is against this background that WHO has been examining the implementation of its Fifth General Programme of Work, which covers the period 1973-1977, and elaborating medium-term and long-term plans. How to transform the broad objectives of the programme of work into a coordinated programme of interrelated activities with well defined targets has been the main object of the review undertaken by the Organization in 1974.

The Fifth General Programme of Work was conceived with country needs very much in mind. The wide variation in these needs from country to country gives rise to complex problems, not only in the formulation of health policies but still more in the planning, organization, and implementation of composite health programmes, for which the available resources are usually far from adequate. It is of little help to governments if WHO simply offers them piecemeal solutions to isolated problems; it must adopt a far more systematic approach that will enable countries to identify their priority health problems, to specify the operational objectives on which solutions to the problems depend, and to elaborate programmes for attaining those objectives. This approach, known as country health programming, was pioneered in Bangladesh in 1973 with the help of a WHO team, and has been introduced during 1974 first in Nepal, and subsequently in Pakistan, Thailand, Afghanistan, and Sudan. The experience so far has been encouraging and indicates that country health programming is a valid method of establishing medium-term programmes at the country level. The methodology is pragmatic and flexible and could be used in developed and developing countries alike. It takes into account not only the epidemiological, environmental, and demographic aspects of the health situation but also the political, social, educational, and economic factors that have important health implications.

It must be emphasized that WHO has no intention of itself undertaking the studies needed for country health programming. For this it does not have the resources, and even if it were able to attempt such a task, it would be doing a disservice, for it would be hindering countries in the development of their own mechanisms of health policy formulation. The Organization's aim is to develop methodologies for country health programming, to encourage countries to adopt this approach, and to assist them in setting up the mechanisms necessary for a constant review of the situation. Country health programming will have small success if it remains a one-time exercise. It is meant to be a continuous programming process based on recurrent analysis of the health sector, and once this is fully understood the consequences for the organization of ministries of

health could be far-reaching. Many countries will need to create permanent mechanisms at the highest levels for programme formulation, management, and evaluation.

The Organization hopes to develop close partnerships with Member States that embark on country health programming, so that it can respond in a sensitive and rational way to their real health needs and build its medium-term programmes around them. At present the precise information required is not available, but it is clear from the country needs already identified that most of the problems are of a multidisciplinary nature. In view of this a feasibility study has been undertaken to determine the value of using multidisciplinary programme teams for medium-term programme formulation and implementation. These teams were asked to elaborate, for each programme area, a detailed plan of activities covering a period of five to six years, to be undertaken in countries, and at the regional, interregional, and headquarters levels. The results of the study have demonstrated that a functional rather than a structural approach is essential for the attainment of the objectives of composite programmes. They have also confirmed the value of multidisciplinary teams in stimulating exchanges of experience and opinions among staff members whose interests would otherwise tend to be restricted to a single programme sector.

Various approaches to medium-term programming are being developed by the regional offices. Some are already making broad country programme projections on a regional basis, while others are concentrating on specific areas with a view to applying the lessons learned in these discrete programmes to medium-term programming in general at the regional level. The importance of considering programme needs over a number of years has become more apparent as a result of the introduction of programme budgeting.

There is also increasing pressure from the governing bodies of the United Nations to strengthen inter-agency collaboration in the elaboration of medium-term programmes for social and economic development. WHO has participated actively in interagency consultations on the most appropriate forms that such collaboration might take and it is clearly necessary that the medium-term programmes developed for this purpose should be representative of the Organization as a whole. This need has been kept in mind in the preparation of a preliminary study on the Sixth General Programme of Work for submission to the Executive Board. Furthermore, a study of longer-term perspectives has been begun in an attempt to identify possible new issues that might have to be incorporated into the Organization's programme.

At all levels of programme formulation and evaluation ready access to relevant, reliable, complete, and up-to-date health information is indispensable. Studies have been in progress throughout 1974 with the aim of restructuring WHO's reporting system, identifying the real information needs, and rationalizing the collection and dissemination of pertinent information for country health programming, project formulation, and project management.

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Many of WHO's programmes depend for their successful continuation on advances in knowledge, which can only come through carefully planned and coordinated research. At the request of the Twenty-fifth World Health Assembly, proposals were prepared for the development of long-term activities in biomedical research, with special reference to international coordination. The Twenty-seventh World Health Assembly endorsed these proposals, giving prominence to the initiation and promotion of research in developing countries, particularly with respect to parasitic infections and other endemic diseases. The Health Assembly welcomed the proposal that regional offices should be more closely involved in WHO's research activities and emphasized the need for international coordination of biomedical research through medical research councils and other national institutions.

At its sixteenth session in June, the Advisory Committee on Medical Research gave detailed consideration to the special problems of promoting research in developing countries and strongly recommended the institution by WHO of an expanded programme of research and training related to tropical communicable diseases. One of the main objectives of this expanded programme was considered to be the application of modern biomedical concepts and methods to the development of new approaches to the prevention, diagnosis, and treatment of tropical communicable diseases. The programme would seek to create expertise in the biomedical sciences in developing countries, placing the initial emphasis on Africa but quickly adapting the experience gained in the implementation of this programme to other Regions.

It was recognized that the financing of this expanded programme could not be encompassed within the regular budget of WHO and that it would be necessary to seek contributions to the Voluntary Fund for Health Promotion from governments and private granting agencies. It is pleasing to be able to report that some "seed" funds have already been placed at WHO's disposal. These have been used to finance exploratory visits to several countries in Africa, to identify existing research institutions in need of assistance, and to investigate the possibility of establishing a network of such institutions linked to a multidisciplinary research centre devoted to research and training in parasitic infections and other tropical diseases. A series of meetings of consultants and representatives of universities and laboratories involved in research and training activities related to these diseases have also been held. A group of voluntary agencies will be meeting in 1975 to discuss the provision of further financial support.

In setting up a multidisciplinary research institute in a developing country, the aim would be to bring together specialists in such disciplines as immunology, molecular and cell biology, biochemistry, and genetics, who would undertake a goal-directed attack on the parasitic and other tropical communicable diseases prevalent in the areas served by the centre and the other institutes comprising the network. One of the most important tasks of this team would be to study the host-parasite relationships and other biological characteristics of parasites in order to acquire the basic knowledge necessary for the development of effective vaccines or chemotherapeutic agents. A multidisciplinary research centre of this kind could act as the focal point and stimulus for the many excellent institutions on the African continent that are already carrying out research on communicable diseases. The WHO expanded programme aims at strengthening these centres—and particularly African universities—through the development of their research and training potentialities and through increasing collaboration and communication among them and with centres outside Africa.

The placing of so much emphasis on this research programme does not mean that WHO is overlooking the close association between socioeconomic conditions and the tropical communicable diseases. Poverty and poor sanitation are among the principal reasons for the prevalence of these diseases, and they are aggravated by malnutrition. Conversely, the effects of malnutrition are aggravated by tropical infections. All these problems are interrelated, and it is only by attacking them simultaneously that real progress can be expected.

As already mentioned, the Twenty-seventh World Health Assembly emphasized the need for WHO to collaborate more closely with medical research councils and other similar bodies in the international co-ordination of biomedical research. As a first step a meeting of representatives of such national institutions was convened in December. They reported on their national policies in biomedical research, their present activities, and their future plans, and they discussed methods for facilitating the exchange of information on biomedical research in selected fields. Agreements were reached on bilateral and multilateral cooperation in the fields discussed and on the role of WHO in promoting and coordinating this research. It is intended that further meetings be held to assess the achievements and to delineate other areas in which collaborative

research would be desirable. It is hoped that through these closer links with national research institutions WHO will be able not only to accelerate research on the most urgent problems facing the world, but also to obtain earlier notification of the results so that they can be applied with the least possible delay.

*

Traditionally, medicine has been viewed as the art of healing the sick. To this role has been added in more modern times the prevention of specific diseases. Very recently, however, a broader concept has been emerging in many countries—that of improving the overall quality of life. This is a concept that is, in fact, already embodied in the WHO Constitution, which defines health as “a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity”.

In its early years, WHO was too preoccupied with relieving the burdens of disease and infirmity to pay much more than lip-service to the broader aims implied in this definition. Today, it is striving to translate these aims into action and is looking for ways of achieving a more stable equilibrium between man and his environment, in the hope that this will not only reduce man's vulnerability to disease but also permit him to lead a more productive and satisfying life. A hint of this new emphasis could already be seen in the choice of the topic for the Technical Discussions at the time of the Twenty-seventh World Health Assembly in 1974—“The role of the health services in preserving or restoring the full effectiveness of the human environment in the promotion of health”. As a follow-up to this, and in preparation for WHO's participation in the United Nations Conference on Human Settlements (Habitat) to be held in 1976, the Technical Discussions at the Twenty-ninth World Health Assembly in 1976 will be devoted to “Health aspects of human settlements”.

In any consideration of the health aspects of human settlements, the provision of basic sanitation services is of paramount importance. Even a modest improvement in basic sanitation in the developing countries would go far towards reducing the incidence of parasitic and other communicable diseases, especially the enteric diseases, including cholera. The high capital and operating costs of the complex community water supply and waste disposal services found in industrialized countries have so far proved a major obstacle to their incorporation in programmes designed to improve the basic sanitary conditions in developing countries. As suggested in my address to the Twenty-seventh World Health Assembly, WHO's motto should be “don't adopt—adapt”. There has therefore been a concentration on a programme that encourages the use of suitable low-cost technologies that have already been found to be both safe and effective in situations comparable with those in the countries where they are to be introduced. This approach was strengthened in 1974 when six organizations—UNICEF, UNDP, UNEP, IBRD, the Organization for Economic Cooperation and Development, and the International Development Research Centre of Canada—agreed to collaborate with WHO in elaborating an expanded programme for the transfer of technology suited to the development of potable water supply and sanitation services in rural areas. Not only the technical and economic constraints but also the sociocultural, motivational, educational, and institutional aspects are being taken into account.

This collaborative programme can succeed only if countries are willing and able to participate actively in carrying it through. One problem that is still causing much concern is the continued lack of adequate environmental health institutions and services in many Member States, which is seriously impeding the implementation of the programmes of international and other interested agencies. WHO is trying to assist in the establishment of such institutions and services and is encouraging Member States to introduce broadly based training pro-

grammes that will permit them to staff their services with personnel versed not only in the practical aspects of environmental health but also in the scientific foundations, including human ecology.

During the year efforts have been made to strengthen WHO's collaboration with both national and international agencies that have an interest in environmental health, and especially with the United Nations Environment Programme (UNEP). Funds made available to the Organization by the latter have enabled certain programmes to be greatly accelerated, especially the environmental health criteria programme. This programme aims at developing an integrated approach to the assessment of the health effects of specific environmental pollutants and hazards through all the possible pathways of exposure. An increasing number of Member States are participating in this programme, which depends heavily on the collaboration of national scientific institutions. Environmental health criteria are an important decision-making tool for governments when drafting legislation and planning environmental control programmes. They need to be supplemented, however, by the data obtained from environmental health monitoring, a subject that has been explored during 1974 with Members with a view to monitoring both the conditions in the environment and the resulting health effects. Here again international collaboration and the full participation of Member States are indispensable if the programme is to be successful, and WHO is cooperating closely with the United Nations Global Environmental Monitoring System (GEMS), which has been established under the auspices of UNEP.

An aspect of environmental health that often receives insufficient attention is food hygiene. To assist Members wishing to improve or establish services for controlling food hygiene, WHO is collaborating with FAO and UNEP in the preparation of guidelines for the organization of a food control and inspection service. In many countries, however, the problems of food hygiene are inevitably secondary to those of obtaining and distributing sufficient quantities of food to prevent malnutrition, if not starvation. The past year has seen a severe decline in world food reserves, rocketing food prices, and food rationing in several large countries. In some, mass hunger has precipitated political unrest, and in nearly all the developing countries malnutrition has caused a severe setback to their economic and social progress. The recognition, now widespread, that poor nutrition is a major obstacle to national development is perhaps the only reassuring feature of the present situation.

Some of the factors that precipitate acute malnutrition are relatively easy to control and, except in the wake of major disasters, the tragic picture of death from starvation should never be witnessed today. But if our aim is to improve the quality of life, the prevention of acute malnutrition is scarcely sufficient. What is needed at the present time is determined and concerted action by FAO, UNICEF, WHO and other international and bilateral agencies directed at raising the nutritional standard of the undernourished populations of the world to the point where every individual will be able to make a maximum contribution to the life of the community and take full advantage of the opportunities that life affords him.

The basis of the strategy developed by WHO is continuous local, national, and international surveillance of the nutritional situation. Considerable advances in evolving methodologies for such surveillance have been made by WHO in the last few years and several countries are carrying out collaborative studies on the reliability and validity of nutritional indicators. An expert committee will meet in 1975 to elaborate guidelines for the methodology of nutritional surveillance. The intention is that the data collected in these surveillance programmes should be used to develop national food and nutrition policies. It will be an important responsibility of the international agencies collaborating in this effort to motivate and assist national governments in formulating and implementing such coordinated food and nutrition policies rather than embarking upon scattered, disjointed programmes as and when the need arises. If these policies are to be translated effectively into operational pro-

grammes, the nutrition services will need to cooperate closely with those concerned with maternal and child health, health education, and family planning, and the maximum use will have to be made of health auxiliaries. In collaboration with UNICEF, WHO has worked out a strategy for the guidance of local health services in developing countries.

International efforts to solve the world's food problems received fresh impetus in November 1974 when the World Food Conference, convened by the United Nations, met in Rome. WHO played an active part in the meetings of the Preparatory Committee of the Conference and made substantial contributions to the work of the Conference itself. Among important recommendations of the Conference are the establishment of a joint FAO/WHO/UNICEF global surveillance system along the lines just described and the further development of the FAO/WHO food contamination monitoring programme.

Side by side with these efforts to improve the nutritional status of future generations, WHO must continue to assist countries in the provision of care for those now afflicted with malnutrition. Although some forms of nutritional deficiency, such as scurvy and beri-beri, have been virtually eradicated, others remain major problems. Protein-energy malnutrition impairs the growth and functional development of millions of children throughout the world, while endemic goitre with the associated cretinism and mental retardation is still all too common. Xerophthalmia and nutritional anaemia are among other serious consequences of a deficient diet that have yet to be brought under control. WHO is developing methodologies for combating these conditions and operational trials are in progress. One of the main impediments to implementing these programmes is the shortage of suitably trained personnel. Besides sponsoring training courses, WHO is reviewing the curricula of medical schools and schools for other health personnel with the object of suggesting how more emphasis might be placed on nutrition and the instruction in this subject brought up to date.

In the long term, the prospects of overcoming the problems posed by the current world food shortage and the maldistribution of existing food supplies can be viewed with optimism. Nevertheless, it must be recognized that technological advances in food production and improved methods of distribution will not, in themselves, be sufficient to provide all the answers. Until the underlying socioeconomic and political difficulties have been resolved, the nutritional status and the quality of life of millions of people are likely to remain well below even the most modest aspirations.

There are close links between nutritional status, family health, and family size. Malnutrition increases pregnancy risks, impairs lactation, and favours high infant and child mortality, particularly where there is a high incidence of infectious disease. Although it is not yet known for certain to what extent decisions on family size are influenced by the fear of high infant and child mortality, it is probable that in many areas high infant mortality is one reason for numerous, closely spaced pregnancies. On the other hand, closely spaced pregnancies have been shown to be associated with high infant mortality rates, with anaemia and lactational deficiency in the mother, and with premature weaning of the child and consequent malnutrition. In recent years, the complex interactions between reproductive patterns and health have been increasingly well documented and it is now generally accepted that there are sound health reasons for the regulation of family size and especially for child spacing. Lengthening the intervals between pregnancies is likely to prove of great value in improving the quality of life for children already born and for their mothers.

Human reproduction, family planning and population dynamics now constitute one of the Organization's largest programmes. The four main programme areas are technical support to country programmes, manpower development, synthesis of knowledge and information exchange, and research on the development of new contraceptive methods and family planning care in health services.

The Organization participated very actively in the work of the World Population Conference, which was held in Bucharest in August 1974. In addition to preparing background papers and holding preliminary meetings on health and population, the Organization was represented on the Expert Advisory Committee responsible for drafting the World Population Plan of Action. The implications of this plan for WHO and its Member States and the measures to be taken to implement the resolutions adopted by the Conference are at present under examination.

Experience has shown that the maternal and child health services can make an invaluable contribution to the provision of family planning care. Although their primary functions are to ensure the health of the pregnant woman and her safe delivery and to safeguard the newborn and growing child against the risks to which it may be exposed, the maternal and child health services also afford excellent opportunities for assisting parents to plan the spacing of their children and size of their families and for continuous exposure to health education.

During the past few years WHO has also been giving attention to the psychological and social aspects of family planning programmes. Research centres in various countries have indicated their willingness to collaborate in carrying out detailed comparative studies of the nature and prevalence of the psychosocial problems associated with the use of different contraceptive techniques. The need for such studies is illustrated by the fact that, whereas some reports claim that there are few if any psychological problems, others mention a variety of complications, including serious psychosomatic disorders, sexual incapacity, neurasthenia, and even psychotic conditions, the prevalence in some cases being stated to be as high as 20% of all users. If these figures are substantiated, it will be necessary to look very carefully into the reasons for such complications and to reassess the suitability of the techniques being used.

These studies on the psychosocial aspects of family planning will complement other studies that are being undertaken on the psychosocial factors influencing health and health actions in general. This programme is one of several that have been introduced recently with the object of acquiring knowledge that can be used in the promotion of optimal mental health. Any endeavour to improve the quality of life must take into account the fact that some 370 million people in the world are likely to suffer from severe mental illness at some time in their lives. In many countries, the slender resources allocated to psychiatry are often barely sufficient to keep the problem of mental disorders below the level of a public outcry. In spite of the fact that mental disorders are responsible for intense human suffering and cause formidable economic losses, they receive only scant attention. The severely ill are shut away in long-stay hospitals, locked up in prisons, or forced to become vagrant and left to starve. More constructive would be a programme aimed at identifying patients with major psychiatric illnesses and treating them as far as possible within the community, since in many cases effective treatments are now available for use in such circumstances. It is true that in some countries a considerable proportion of the health budgets has been poured into mental health services, but even in these countries the resources are seldom used for such community care, still less to remove the causes of mental ill health.

In recognition of the need to change this situation, the World Health Assembly has recommended that WHO should initiate expanded programmes of multidisciplinary research in mental health. Several task forces have been created to assist in the development of WHO's overall programme in this field and, in addition to the studies of psychosocial factors already referred to, research is being sponsored in the neurosciences, in the operation of mental health services, in epidemiological and biological psychiatry, in the behavioural sciences, and in dependence on drugs, including alcohol. At the same time, it is important to recognize that a significant proportion of the patients who are seen by the primary health care services suffer from minor psychiatric disorders, in which somatic symptoms predominate. To cope with these patients and with the many

others whose somatic illness has an important psychological component, it is necessary for doctors, nurses, and other health workers to have appropriate psychiatric skills and a positive attitude to mental health. WHO is therefore assisting countries in the training of different categories of medical and non-medical personnel with responsibility for the care of the mentally ill, the prevention of mental disorders, and the investigation of psychosocial problems. It is hoped that these programmes will lead to better treatment of mental illnesses as well as to more emphasis on measures for promoting optimal mental health.

It would not be right to leave the subject of preventive medicine without reference to WHO's expanded programme of immunization. This was initiated in 1973 in recognition of the fact that, whereas diphtheria, pertussis, tetanus, and measles have ceased to be important public health problems in the more affluent countries, they are still major causes of infant mortality in the developing countries, while poliomyelitis in these countries is rapidly reaching the epidemic proportions that were common in many countries with temperate climates before they introduced mass vaccination programmes. Tuberculosis, too, remains a serious problem in the developing countries. The reasons for the failure to implement adequate immunization programmes in these countries are numerous and include: absence of trained personnel and of efficient supervision; lack of equipment; lack of deep-freeze transport and storage facilities; currency exchange difficulties; reliance on complex, multiple-dose schedules; and failure to obtain public understanding and cooperation.

Guidelines for the planning, execution, and evaluation of expanded programmes of immunization were developed by a group of consultants in April 1974. A month later there was a lively discussion in the Twenty-seventh World Health Assembly on the subject of immunization programmes. The outcome was a resolution calling on Member States to maintain immunization programmes against the common childhood diseases to which this method of control is applicable and requesting intensification of assistance to Member States in the planning of their programmes, in identifying the obstacles, and in finding ways of overcoming them. One of the measures being taken is the organization of a series of seminars in the Regions at which representatives of Member States will meet to discuss the practical steps that their governments can take to develop or expand their immunization programmes. The first of these seminars was held in November in Ghana and was attended by representatives of 11 countries in the African and Eastern Mediterranean Regions. In two countries in Africa, operational studies to develop simplified but efficient techniques for use in vaccination programmes have already been initiated. To help Members finance these programmes, a special account has been opened under the Voluntary Fund for Health Promotion, and arrangements have been made for WHO to assist countries to purchase vaccines and equipment. In addition, WHO is expanding the activities already in existence for ensuring that vaccines are of satisfactory quality. If Member States cooperate fully in these immunization programmes, it should be possible to achieve substantial reductions in childhood morbidity and mortality over the next few years.

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The difficulties that have been experienced in implementing large-scale immunization programmes are, of course, but a part of the much greater problem of the provision of primary health care in the rural areas of developing countries. It must not be forgotten that half the world population lives in these areas and it is predicted that the numbers will increase by 50% before the end of the century. The situation is particularly dramatic in districts that are remote from the larger towns, where the population is often widely dispersed and communications are poor or nonexistent.

It is clear that the type of health service that has been developed in industrialized, more or less densely populated countries is totally unsuited to such conditions. A number of developing countries have therefore

been seeking alternative approaches to the provision of basic health care, through programmes strictly tailored to the dominant needs and demands of particular population groups and requiring for their implementation only the simplest procedures, so that the maximum use can be made of the slender resources available. For the successful operation of such programmes it is important that there should be adequate provision for referral of patients to more specialized services when necessary and for the supervision and continuous training of the primary health workers. This question will be discussed in more detail later.

Many countries have been adopting such innovative approaches and WHO has been following these developments with the keenest interest. In some countries, the Organization has been participating in parallel studies, and it has invited experts who have been closely concerned with selected programmes to write up accounts of them for publication by WHO, so that they can serve as models for other countries.

One fact that emerges very clearly from all these programmes is that their success depends on the use of local personnel at the periphery who are motivated to assume major responsibility for health care. This is just as true of programmes that have stemmed from a national initiative as part of an overall plan for economic and social development as it is for programmes that have originated in the villages as a local effort of self-help. Which of these approaches, or what combination of them, should be adopted will depend very much on the existing level of the health services at the start of the programme and on the social organization of the rural communities, but both have been shown to be equally valid in the right circumstances.

As already indicated, these programmes for the provision of basic health care are intended to be strictly tailored to the most urgent needs of the populations they are meant to serve. Country health programming, which was discussed earlier, is one of the mechanisms for identifying these needs and assigning priorities, taking into account the resources available, and for ensuring proper coordination between the various partners in the promotion of health.

In my introduction to the Annual Report for 1973 I stressed the need for countries to possess the capability for continuous change, since their health priorities and the means and resources at their disposal may change radically in a relatively short space of time. I referred then to WHO's intention to support the establishment of health service development institutes, one function of which would be to assess the changing situation and to advise ministries of health on the merits of alternative solutions to priority health problems. During 1974, two countries—Indonesia and Iran—have established such institutes in collaboration with WHO, and steps are being taken to promote the establishment of similar institutes in Africa and other parts of the world.

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Several passing references have already been made to the shortage of trained personnel to provide the health services needed. This is, of course, a perennial problem, but without the requisite trained manpower no programme, however well conceived, can hope to succeed. Over the past decade the approach to the solution of this problem has undergone a radical change in most countries. In the past, the provision of medical care has been regarded as the sole responsibility of the physician and the surgeon; they were sometimes assisted by less highly qualified personnel, but the taking of decisions on all matters pertaining to the diagnosis and treatment of the patient remained a jealously guarded prerogative of the "doctor". As a consequence, the more affluent countries have been spending vast sums of money in an endeavour to attain and to maintain a high doctor/population ratio, while the poorer countries have despaired of ever being able to train enough doctors to meet what were believed to be the minimum requirements for staffing a health service. Moreover, as long as the present rapid rate of population growth continues, it will be difficult to keep the doctor/population ratios at

their present levels in many countries. In fact, a recent world study has shown that if the doctor/population ratio is not to decline, the number of physicians will have to double before the end of the century. Quite apart from the high cost of training so many physicians, the long period of training required is likely to render it difficult to augment their numbers to such an extent.

Considerations of this nature have prompted even the developed countries to question whether such large numbers of highly trained personnel are really necessary for the efficient operation of a health service. The most dramatic situation is seen in the rural areas of developing countries. Not only are most of these areas without a single qualified physician, but on the average they do not have more than one auxiliary health worker for 10 000 persons. Yet there are hundreds of thousands of people throughout the developing world who, given a short course of training, would be able to attend to the main health needs of the local populations.

Proposals for providing such training are being formulated by WHO. These proposals will concentrate on measures that are appropriate to local conditions and that can, to a large extent, be funded from local resources. The persons to be trained as village health workers should be chosen in such a manner that they are assured of the continuing support of the community once they have been trained. The village health worker is in direct contact with the population; he or she lives among them, is thoroughly familiar with their problems, and is therefore well placed to help individuals and to participate in all aspects of the development of the community. Besides being given a grounding in basic sanitation, the village health worker should be taught how to recognize and treat the common communicable diseases and should be able to assume responsibility for primary health care and health protection and promotion. Among the most important services he or she can render the community are to watch over the health of the expectant and nursing mother, to attend her during labour, and to give her elementary instruction in matters pertaining to her own health and that of her children, including advice on family planning. The proposals that are being formulated for the training of village health workers are designed to equip them in the shortest possible time to carry out these functions with a minimum of supervision. It is important, however, that they should be able to recognize when a problem exceeds their competence and should know to whom to refer it. It is therefore essential that they form part of a rural health team.

The adoption of the health team approach for the delivery of health services to rural areas requires changes in the attitudes of physicians and other qualified personnel who will have to act as team leaders. They must be willing to accept responsibility for the health situation of the entire population, not simply for the health of individual patients, and their training programmes will have to be revised accordingly. In view of the physical difficulties of supervision in remote areas, it may be necessary to envisage the introduction of modern techniques of communication between villages and health centres, in order to provide both staff guidance and continuing education. A programme is also under way for the provision of much needed reference materials, both for the auxiliaries and for their teachers.

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Reference should be made to the progress achieved during the year in one of WHO's major disease control programmes—smallpox eradication. By the beginning of 1974 there remained only four countries in which smallpox was still endemic—Bangladesh, Ethiopia, India, and Pakistan. This permitted activities in the smallpox eradication programme to be accelerated and intensified. Health authorities in the four endemic countries assigned the programme the highest priority and substantial additional resources were mobilized in an effort to interrupt transmission as quickly as possible. WHO was able to provide greatly increased support,

and donations to the Special Account for Smallpox Eradication were made by many Member States, in a number of instances through their development agencies.

An all-out effort was made to ensure the rapid detection of all outbreaks and their immediate control through vaccination. Throughout the endemic areas of Asia, health staff of all categories participated in a week-long village-by-village search for cases every four to six weeks. In these areas, rewards were offered to persons reporting outbreaks.

The results were dramatic. By the end of the year transmission appeared to have been interrupted in Pakistan and smallpox had been eliminated from all but four districts of Bangladesh, four provinces of Ethiopia, and three states of India. In these last strongholds of the disease, and in adjoining areas, special programmes involving more national and international staff than ever before are in progress and the prospects for the detection of the last case of smallpox by the summer of 1975 seem to be good. Before it can be certain that smallpox has been finally eradicated, however, a further two years of active search for hidden foci will have to elapse; nevertheless the achievement of this historic goal now seems almost at hand.

Both the Twenty-sixth and Twenty-seventh World Health Assemblies laid considerable stress on the need for the long-term planning of international cooperation in cancer research. They recognized that the main effort would still have to come from national research organizations, but believed that WHO, including the International Agency for Research on Cancer, could make an important contribution by coordinating these activities and developing uniform methodologies. They recommended that WHO should elaborate a comprehensive international cancer research programme in which Member States could participate on a voluntary basis. During the year, several meetings have been convened to discuss the methodology of implementation of the programme, its aims and benefits, and future prospects.

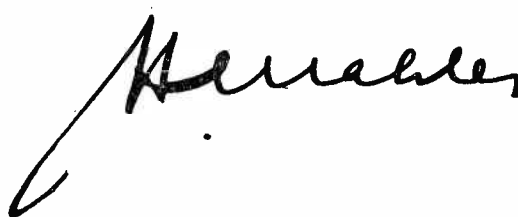
Among the more important activities organized by WHO during the year to promote international collaboration in cancer research was an International Conference on Screening Methodology for Antitumour Drugs, at which agreement was reached on a number of methods to be used in primary screening. The already established programmes in cancer control and in the elaboration of internationally agreed histopathological and cytological classifications of tumours have, of course, been continued. During the year a pilot study on the use of hospital-based registry cards in building up cancer registries was completed, in collaboration with 23 institutions in 17 countries. The work of the collaborating centres concerned with the evaluation of new methods of diagnosis and treatment of cancer and with histopathological nomenclature continues to progress very satisfactorily; twelve volumes in the series International Histological Classification of Tumours have now been published.

A prerequisite for disease control and treatment is accurate diagnosis. For this, the physician depends more and more heavily on laboratory procedures. Every year new techniques are developed and new diagnostic materials are introduced. Yet there are very few national programmes designed to ensure some uniformity in laboratory practice, and control of the quality of diagnostic materials is usually left to individual laboratories or institutions. This situation can lead to diagnostic errors and misunderstandings and it reduces the comparability of laboratory findings in epidemiological studies, health surveys, and other public health activities. At the request of the Twenty-fifth World Health Assembly, proposals were drawn up for a long-term WHO programme for the standardization of diagnostic materials. It was obviously neither possible nor desirable to attempt to standardize all the thousands of diagnostic materials that are in everyday use, so it was suggested that priorities be established for each laboratory discipline, taking into account a variety of medical and technical factors.

The Twenty-seventh World Health Assembly endorsed the proposals and requested an intensification of WHO's work in the coordination of the development of standards for chemical and biological diagnostic materials, with special attention to quality control. It also urged Member States to expand their activities in this field, with particular reference to the quality of commercially distributed diagnostic materials. A grant from the United States of America made it possible for WHO to begin implementation of the programme immediately. As a first step, an assessment is being made of all the resources available in different countries and the actual needs for standardization. This assessment is expected to be completed in 1975. As a service to Member States, it is planned to establish a network of collaborating laboratories, which will be responsible for the custody and distribution of reference materials and will also provide technical advice on their use. It is also planned to disseminate technical information on new accepted reference methods and reagents, including quality control procedures, and to expand WHO's assistance to research and development programmes related to diagnostic standards and to programmes for training laboratory staff in the use and control of reagents.

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In the final analysis it is WHO's Members themselves which have to carry out the reforms and implement the policies and programmes proposed by the Organization. As I have often said, the Organization is but the aggregate of its Member States and it is only with their full participation and cooperation that the Secretariat can respond to their needs. The Constitution of WHO places a statutory obligation on Member States to inform the Organization promptly of all matters pertaining to their health situation. The more complete and relevant such information is, both for individual countries and for the world as a whole, the more effectively will the Organization be able to function. The Organization is now truly worldwide in representation and every year sees a further growth in membership. In 1974, it is gratifying to report, Bahamas, Guinea-Bissau and Grenada became Members, in that order, bringing the number of States enjoying full membership to 141. In addition, Namibia was admitted to associate membership. If all Members and Associate Members were to pool their knowledge and resources, what tremendous improvements in the health and welfare of mankind we could effect in a short time ! Such wholehearted and unstinting cooperation between States may at present seem a far-off goal, but it is one towards which WHO must work with unflagging energy during the coming years.

A handwritten signature in dark ink, appearing to read 'A. Aronson', with a long, sweeping underline that extends to the left.

Director-General

PART I

GENERAL REVIEW

1. STRENGTHENING OF HEALTH SERVICES

1.1 In the organizational study on methods of promoting the development of basic health services presented by the Executive Board to the Twenty-sixth World Health Assembly¹ the view was expressed that a health service system that does not reach most of a population is not fulfilling its functions and that, consequently, for a large part of the rural populations in developing countries the health services are deficient. Ways of assisting countries to overcome this deficiency were examined during the year on the basis of a thorough review of successful services already operating at the local and the national level throughout the world.

1.2 The three main questions considered were the following:

(1) Is it possible for a largely rural developing country, using its own resources, to establish a primary health care system acceptable to the population? WHO is participating in two projects in Ghana and Iran which are designed to seek national answers to that question. Through a project register, a joint worldwide review study with UNICEF, and a series of publications, it is also proposing to give wide publicity to a number of successful attempts at providing an affirmative answer. All of these attempts rely on locally based, locally trained and locally supervised primary health care workers who are either volunteers or else largely financed by the community itself. The solutions require different relationships between the community and the health system and different methods of approach in the different communities as well as major changes in the attitudes, training and organization of other health professionals. Granted that such requirements are met, it is possible to give a positive answer to this crucial question.

(2) In what way can a country plan the employment of its resources so as to have the greatest impact upon its health problems? One method is by country health programming, which brings health planning within the overall development planning of a country. Another is by joint WHO/national review missions (as in Indonesia and Somalia) that concentrate on smaller segments of the population. These appear to

be useful and to deserve extension, but they are still a long way from a holistic approach that takes account of private practice, mission hospitals, locally based indigenous healers and midwives, and the indirect effects on health of other sectors of the economy such as agriculture and education.

(3) How can a ministry of health be assisted to organize its resources so as to make a cadre of health-oriented professionals available and to present and test national alternatives for health? Mention is made below of health service development institutes, which provide a mechanism that appears to be workable and could be built upon and extended, with variations according to needs and resources. In Iran the institute is regarded as a mechanism for bringing together different ministries, local authorities, organizations and universities to deal with common problems; in Indonesia, by comparison, it is directly controlled by the Ministry of Health. In Africa such an institute may need to be different again. WHO experience indicates the need for such institutes to concentrate on the development and field testing of alternative methods for the delivery of health care, teacher training, the training of primary health workers, and educational technology. This part of the programme has received strong support from SIDA and DANIDA.

Health service development institutes

1.3 Health service development institutes, whose emphasis is on function rather than on structure, have been conceived as the research and development organs of ministries of health or other health authorities responsible for the improvement of community health and for the provision of health services. Not all countries have sufficient resources to carry out research and development in health, in addition to providing essential services and carrying out administrative, management and other functions such as training. If they lack the necessary resources they may therefore choose to share an institute with other countries. The most important prerequisite to the establishment of health service development institutes is a national will to promote community health by gradual and adaptive changes, even if these are at

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 206, Annex 11.

variance with established practices. Their sphere of interest covers technology, organizational patterns, the allocation of resources, managerial control of services, the adaptation of training to service requirements, educational technology, and operational and other applied research. The need for and desirability of such institutes were recognized by the Twenty-seventh World Health Assembly in May.

1.4 In 1974 formal agreements were signed with the Governments of Indonesia and Iran for collaboration in the establishment and operation of health service development institutes. The Iranian Health Services Development Institute, formally recognized as the research and development branch of the Ministry of Health, brings together on the one hand the major health services delivery agencies wishing to use applied research in their development and, on the other, various academic and other bodies with the capacity for the applied research required. The West Azerbaijan project (a province-sized research and development effort) is the first major activity of this Institute. In 1974 two new types of community health workers were trained and posted to three districts in the province. These auxiliaries will be able to undertake at least two-thirds of the primary health care required at the village and community level and reach almost all the population, and they will arrange for referrals and follow-ups. Unlike a number of other related projects in Iran for the training of village auxiliaries, this project aims at linking the work of the auxiliaries closely with that of other components of the health services, irrespective of their sponsorship or location. This is being achieved by defining the levels of technical intervention within each component and the management aspects of patient referral and of service control and surveillance. Plans are being prepared for the extension of this project to several other provinces and for an assessment of its national implications. The other main subject under consideration by the Institute was an extension of a Government-sponsored health insurance scheme. This is a high national priority being re-examined following the formation of a new Ministry of Social Welfare in 1974. The Iranian National Committee concerned with health services development and manpower is reviewing ways in which the WHO-assisted national teacher training centre in Shiraz can be related more closely to the Institute and assist the Minister of Health with his programmes.

1.5 The Indonesian Health Service Development Institute is based upon the National Institute of Public Health, Surabaya. This is an already existing institute administered by the National Research Institute of the Ministry of Health, with responsibil-

ities for demographic and family planning and health services research. The former title of the Institute has been changed so as to describe its functions more clearly. Its programme, which comes under the responsibility of a national committee, includes research, using epidemiological and operations research methods, into the structure and functioning of district and provincial health services and of hospitals.

1.6 One of the programmes under consideration in Indonesia is the development and testing of a maternal and child health "package". A health care "package" may be defined as an integrated set of components assisting the application of a particular group of interventions for the improvement of health care under specific socioeconomic conditions. Though each component may be useful alone, the combination of a number of components is likely to be highly effective. The maternal and child health "package" began with a detailed consideration of exactly what auxiliary and paramedical staff could do to care for children. Next a complete and detailed list of behaviourally defined educational objectives was developed, and around them a problem-oriented manual on child care was written in simple language. Sets of teaching aids were assembled to be used with it and appropriate curricula were developed. Ways of testing trainee maternal and child health workers were devised to find out whether the educational objectives had been achieved, and methods were developed to assess the quality of the service provided. The "package" is intended for a particular field of health care (rather than for particular categories of workers, such as nurses and midwives) and can be used by auxiliary and paramedical staff from health centres. The project has been in operation for about 18 months in East Java and is for the time being limited to child care. Later it will be extended to maternity care and possibly to family planning also. The first component of the child care "package" has been the manual, which is at present being tested in several health centres in Indonesia. Although the preliminary results of the study on how effective it is in improving the pattern of health centre child care are expected to become available in 1975, a complete assessment will not be possible for some years. While this activity is designed to evolve a standard health technology for Indonesia in this area, it has interested many countries in the South-East Asia and Western Pacific Regions. It is likely that the health care "package" can be adapted to different countries without great difficulty.

Health planning and management

1.7 The concepts, procedures and training material for country health programming and project formu-

lation and management were further developed in 1974. A workshop was held in Brazzaville in March-April for French-speaking WHO staff, and in preparation for a country health programme to be formulated in Thailand in 1975 a workshop was organized in Bangkok in October jointly by the Thai Government and WHO. A country health programme assisted by WHO will contribute the health component to the national Five-Year Plan in Nepal for 1976-1980. A preparatory mission was also sent to Afghanistan and the first phase of country health programming procedures was initiated in Sudan with WHO assistance.

1.8 In the African Region, most countries have now prepared health plans and some are at the stage of their second or third plan. WHO assistance was given to Congo, the Gambia, Madagascar, Nigeria, Sierra Leone, the United Republic of Tanzania, and Upper Volta.

1.9 In the field of administration and management of health services, countries in the Region of the Americas are requesting and receiving assistance aimed at overcoming wasteful duplication of effort; at attacking the problems caused by the dispersion of sources of income for the financing of health services where adequate systems of financial control do not exist; and at improving decision-making processes that affect the health sector. At present decision-making is often delayed, exercised by different people, not based on reliable information, and in response to demands unrelated to the health sector rather than in response to the health needs of the population served.

1.10 During 1974, the methodology of the Colombia project for research in comprehensive health planning¹ was refined and applied to the public health services of the province involved. It identifies and analyses a health agency's problems in relation to medical care and supporting services, administration, planning and information by comparing performance with policies and with the ideal characteristics formulated in the project on the basis of the views of expert committees and other authorities. This evaluation was carried out with the cooperation and participation of members of the provincial services. The provincial health services have already begun to introduce certain practical changes in their operations and in their next five-year plan. The project team in proposing innovations took into account not only technical factors but also the organizational and human problems associated with change.

1.11 Assistance was provided by WHO in the South-East Asia Region to strengthen the health planning units in Bangladesh, Burma, Indonesia, Nepal and Thailand. Planning for ten years or more has now become an integral part of national planning in Burma, Mongolia and Nepal. In Indonesia and Nepal planning within the country was also emphasized. Help was given in Indonesia and Thailand to improve the management of their health services. Two orientation courses were organized for public health administrators on operations research and systems analysis in Surabaya and Jakarta, and a seminar on health economics was organized in Bangkok.

1.12 Studies in the European Region focused on the socioeconomic aspects of health service planning in Austria, the Federal Republic of Germany, Hungary and the USSR. Their results were presented at the European Conference on National Health Planning held in Bucharest in March.

1.13 In the Eastern Mediterranean Region, all but three countries have health sector plans forming part of their socioeconomic plans. Some have acquired considerable experience of planning techniques, such as Iran, which has launched its fifth five-year plan. Others, such as Ethiopia, were assisted in assessing the situation in preparation for a fourth five-year socioeconomic development plan. In Yemen, WHO assisted in an advisory capacity in preparing a first sectoral plan for the health services. A management study is now being undertaken in the same country of the Health Manpower Institute and of the basic health services in Hodeida and Sana'a. WHO assisted a national task force in Somalia in drawing up a programme, to cover the years 1974-79, for the development and extension of the basic health services; it consists of a nationwide immunization and surveillance programme and another for personal health services and environmental improvement (with a phased extension from the present pilot area). The programme includes statements of operational objectives and clear indications for the timing of the various phases of implementation. The measures and resources required are also clearly defined, covering, for example, training requirements and administration and management needs. The major tasks of the programme are listed and WHO's contributions indicated.

1.14 In the Western Pacific Region, WHO collaborated with six countries in their national health planning efforts. In Laos and the Republic of Viet-Nam stress was placed on the organization and coordination aspects of health planning and measures were proposed

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 7.9.

to improve the collection of data for their five-year national development plans. The first phase of country health programming in Laos began in 1974 and the information collected will be used as a basis for formulating the country health programme. In both Malaysia and Western Samoa preparations were made for the third five-year plans. Malaysia was helped in planning the implementation of the Pahang Tenggara health services development project. In Tonga assistance was given for the formulation of a national health and manpower plan, while in the Philippines the organization of the planning unit of the Department of Health, existing policies, and the programme proposals envisaged for the national health plan were reviewed. The health planning manual originally prepared for the use of participants in regional and country courses on health planning in the Western Pacific Region was revised and brought up to date. The revised edition contains a section on country health programming and project formulation and management; it is planned to have it reviewed by experts before it is distributed to national staff to guide them in planning.

Development of health services

1.15 A register on health services development projects—whether WHO-assisted or not—came into use during the year. Its main purpose is to collect information on such projects for dissemination to countries or to interested research groups, through widely distributed quarterly leaflets listing all projects accepted for inclusion in the register and giving a brief indication of their contents and objectives. There are methodological difficulties in developing such a register. If it is large, the amount of information available from each project must be limited and it becomes of questionable value to some consumers. If it is limited and highly selective, the collection of detailed information on the project is a burden on the investigators. WHO has attempted to take a middle course between these extremes, but the present register is more selective than all-inclusive.

1.16 In compliance with resolutions WHA25.42 and WHA26.35 of past World Health Assemblies, WHO in 1974 established a programme team for improving the delivery of health services at the peripheral level through the utilization of village health workers. The team developed an approach covering training logistics, costing and guidelines for adaptation. A working document on the training and utilization of village health workers was prepared in elementary English, French and Spanish.

1.17 The collection of information in the large-scale study initiated by WHO and UNICEF in 1973¹ on alternative approaches to meeting basic health needs of populations in developing countries has been completed. Apart from individual expert contributions and international literature, it used as sources the reports of four WHO/UNICEF teams that visited Bangladesh, Cuba, India, Niger, Nigeria, the United Republic of Tanzania, and Venezuela, that of a WHO team that visited China in 1973, and an independent survey of the Chinese health system. The ample material thus compiled was used for drafting the study report, which was reviewed and expanded by a group of experts, some from the countries visited, at a meeting in Geneva in July.

1.18 The study was made because of the recognized failure to meet the basic health needs of the majority of populations in developing countries, particularly in rural areas. The conclusion of the study is that, despite the immensity of the problems and the difficulty of the economic situation, it may be possible to improve the health status of those populations by a policy combining and coordinating the efforts of many economic and social sectors, with the health services playing a prominent role. Attempts at reaching larger numbers of people would appear to entail a radical reform of most health-providing systems so as to bring about changes in the centres of power, in political decision-making, in the attitude and commitment of health professionals and administrators in ministries of health and universities, and in people's awareness of what they are entitled to. Inertia and opposition by vested interests would need to be overcome.

1.19 Such fundamental changes in health care in developing countries would require correspondingly far-reaching changes in the organizational structure and management practices of health services. They would need a new kind of health professional, who would have a wider social outlook and have received radically restructured education and training oriented to the actual requirements of the country. These health professionals would work closely with large numbers of suitably trained primary health workers.

1.20 The most dramatic improvement in the health of a population appears to have occurred where there has been an intensive effort to improve all sectors of

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 7.26.

development in a coordinated manner. However, such an approach is not the only one. Regional programmes, as the study shows, have demonstrated that less ambitious endeavours can also succeed if there is readiness to involve the community in the delivery of health care.

1.21 A publication is in press describing a number of promising approaches to meeting basic health needs in selected developing countries. It consists of accounts of approaches in China, Cuba, Guatemala, India, Indonesia, Iran, Niger, United Republic of Tanzania, and Venezuela.

1.22 A multidisciplinary WHO expert committee met in July and August in Geneva to discuss community health nursing. Its objectives were to clarify the contribution of nursing to the improvement of community health, to define the role, function and tasks of the community health nurse in a health team, and to consider the education of personnel for community health nursing. The urgent need for health services at the peripheral level was emphasized, as well as for community involvement in developing and providing health services, for the preparation and proper utilization of all levels of health workers, and for the development of alternative approaches. The role of the community health nurse was described as that of a generalist who, in addition to being a provider of primary health care, is able to communicate with and motivate populations and to interrelate effectively with educational, social and other systems within the country.

1.23 The discussion brought to light the shortcomings in the present coverage of peripheral health services and the need for community health nurses in them. Nowadays nurses are concentrated in hospitals and too few work at the community level; community health nurses can provide a link between the periphery and the rest of the health services. The expert committee agreed that nursing should focus upon health care delivery for the total population and not for selected groups such as hospital patients; the basic concept should be health, not disease, the whole educational programme being oriented away from pathology and medical institutions towards health and the community; and the nursing education system should be radically changed so that community training is the first and obligatory step, though sometimes followed by hospital and other specialized training.

1.24 Preliminary steps have been taken, in all the Regions, to collect information on incentives offered to government medical officers of health and other

health workers to work in remote rural or semi-rural areas. This information will be given wide circulation to Member States and other interested bodies.

1.25 Assistance was given to 43 projects for the development of health services in 31 countries of the African Region. In the Sahelian area the emphasis was on the health problems caused by drought. Joint Government/WHO/UNDP/UNICEF missions evaluated the results of projects in Burundi, Central African Republic, Chad, and Mali. The main objective of this programme was to assist national health services in meeting the basic health needs of the rural communities by improving the administration of the services. The present system of organization of health services too often excludes rural communities, and improvement in the level of health of these communities and in their environment is possible only if the communities themselves actively participate. This requires that they should become aware of their own needs and seek solutions to their health problems.

1.26 In the South-East Asia Region, help was given in the development of rural health services in Bangladesh through the establishment of *thana* health complexes and union sub-centres, account being taken of national policy decisions and the country health programming conducted in 1973. A total of 12 000 single-purpose workers were retrained and took up duty as multipurpose family welfare workers. Though Bhutan is not a Member of the Organization, WHO as well as UNICEF and WFP will participate in a UNDP-funded project for the development of health services that was approved in July for an initial period of two-and-a-half years. WHO took part in the first UNDP mission to Bhutan in relation to that project. In Burma, assistance was given in the preparation of the second master plan of operation for the strengthening of the health services. In India's fifth five-year plan, which started in April 1974, rural health services were given a high priority and WHO assistance was given to organizing workshops for trainers and health administrators so as to develop a national pattern for training multipurpose workers. The training of multipurpose workers is taking place at seven health and family planning training centres in India. The present phase of a research project in district health administration covering the primary health centre, Kiloj, Rothak District, India, came to an end and the results were evaluated; the findings are important in plans for preparing the multipurpose worker for his duties in the rural health services. The project has been shifted to a primary health centre in Rajasthan. In Thailand assistance continued to be given to the setting-up of mobile health teams, in

implementation of the provincial development plan for Chonburi, which had been prepared according to project systems analysis methodology. In Nepal, operational studies on the delivery of integrated health services were completed in two pilot areas in Bara and Kaski districts and the studies have been extended to four districts. Vertical programmes that have been integrated are those concerned with malaria, smallpox, tuberculosis and family health. In Indonesia, a project on the strengthening of national health services was restructured to contain three interrelated components: (a) health planning and evaluation; (b) research and development in health services, with a view to promoting their efficient and effective functioning; and (c) health care delivery, with a view to providing easily accessible health services through the development of health centres. A joint Government/WHO coordination committee met in April to draft the plan of operation for the project in keeping with the objectives of the second five-year development plan, launched in April. The project has been strengthened by the addition of statisticians, a systems analyst, a health economist, a management expert and an educationalist.

1.27 In the European Region assistance continued to be given to Algeria, Morocco and Turkey in improving the methods and organization of their health services and in training their health personnel. In Algeria the development of the health infrastructure continued, the health services carrying out specialized campaigns such as malaria eradication and mass vaccination. A health planning course organized in 1974 was the first step in the beginning of health planning activities in Turkey.

1.28 In the Eastern Mediterranean Region WHO-assisted basic health services projects were reviewed in Afghanistan, Iraq, Somalia and Yemen. These and related activities within the Region are expected to lead to more effective formulation, management and execution of projects and ultimately to have a greater impact through an improvement in international efforts. Assistance was provided in the coordination and development of health services in most countries of the Region—in Afghanistan, Democratic Yemen, Ethiopia, Iraq, Libyan Arab Republic, Pakistan, Qatar, Saudi Arabia, Somalia, Sudan, Tunisia, United Arab Emirates, and Yemen. These services proved particularly useful in situations such as the floods in Pakistan and the Syrian Arab Republic, the return of refugees to Southern Sudan, and the drought in Ethiopia. WHO provided technical advice on health problems and coordinated the provision of medical supplies by the Office of the United Nations Disaster Relief Coordinator, UNICEF, the League of Red Cross Societies and other agencies. Community

nurses in WHO-assisted basic health projects in this Region are reaching families in rural areas with services that provide health education, maternal and child care, nutrition education, immunization and family planning. Demonstration health centres in Afghanistan, Iraq and Somalia serve as foci for the provision of health care while giving in-service education to multi-disciplinary health teams.

1.29 In the Western Pacific Region, the Fijian Government is considering using middle-level health workers for the peripheral areas; WHO assisted by examining the current staffing situation, collecting other baseline data and submitting a report on training alternatives, at present under consideration. WHO assistance in the field of public health administration continued in Malaysia and began in Papua New Guinea. A project in the Philippines is now entering its second phase. The health plan for the Province of Rizal reported upon in 1973¹ is being redrafted in view of the changing conditions and resources. As a result of previous WHO studies, which revealed that most of the services rendered by doctors in the rural health units could be adequately dealt with by specially trained public health midwives, a new system of primary medical care was established on a pilot basis throughout the province. The Government suggested that the project should be used to provide assistance in the development and management of health services at the regional level instead of being confined to the demonstration province of Rizal, and its possible extension on a national scale is being considered. In the Republic of Korea a manual for peripheral health workers was completed and job descriptions for the different categories of workers in the health centre drawn up. In the pilot area the single-purpose auxiliaries in tuberculosis, family planning and maternal and child health were retrained as multi-purpose workers and are now functioning as such. A public health physician's manual was completed. A two-way referral system was established between the health subcentres and the health centre, with the supervision clearly defined. WHO is also assisting with the restructuring of hospital internships so that they are more closely related to the needs of the community. Arrangements are being finalized for WHO assistance to Singapore in the planning and supervision of the first phase of the rebuilding of a major general hospital and a new teaching hospital which, when the three planned phases are completed, will have about 2500 beds. In Tonga assistance was given in planning a phased development of the hospital administration and service systems. In Western

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 7.14.

Samoa assistance continued to be given to health services development. The delivery of health care at the community level is improving and tuberculosis control is now fully integrated with the basic health services. Assistant health inspectors are being trained and further assistance was given to the new central sterile supply department of the Apia Hospital.

1.30 The inadequacy of the resources available for *financing the health services* of the rapidly growing populations in the developing countries and the continuously escalating costs of health services in developed countries have created a situation in which hardly any country is satisfied with the financing of its health services. WHO is accordingly seeking methods of developing the health services through assistance involving research and development components and using financial methods as a mechanism of change in health service systems. The purpose is to foster the overall development of the services so as to obtain the maximum population coverage, utilization and quality possible with the resources available in the country. Through such technical assistance, it is hoped, WHO can increase the potential usefulness of even minor financial resources, help to control the escalation of health services costs, and encourage contributions from social security and other financial sources. A detailed proposal was prepared, with ILO assistance, for a programme on methods of financing health services, establishing priorities for further WHO activities.

1.31 In the Region of the Americas a programme of special assistance was initiated to help governments in research on and the analysis of systems of financing and expenditures and costs in the health sector. The studies carried out through this programme constitute a starting-point for the development of financial information systems, and of actual production activities. Advisory assistance was provided to four countries in 1974; and three other countries have requested assistance.

1.32 After a discussion with various United Nations agencies and selected experts, an operational plan for WHO activities in *disability prevention and rehabilitation* was drafted. Geriatrics was considered as forming a specific part of such a programme. A special task force was organized for the programme. It contributed to an international seminar on rehabilitation sponsored by ILO in Teheran in April, a meeting in Geneva in September of the Council of World Organizations interested in the Handicapped and an *ad hoc* United Nations interagency meeting in November on disability prevention and rehabilitation which included the mental health aspects.

1.33 The report of a WHO expert committee on planning and organization of geriatric services¹ was presented to and utilized by United Nations experts who met in New York to prepare proposals dealing with the question of the elderly and the aged, as recommended by the United Nations General Assembly in 1973. Following the recommendations of the expert committee, the initial steps were undertaken for a global analysis of national health programmes for the elderly and the aged and for standardization of the terminology.

1.34 In the European Region, a working group on rehabilitation in long-term and geriatric care met in 1974. WHO maintains a close relationship with the Organization for Economic Cooperation and Development, which is developing social indicators in the field of health, and it prepared a contribution on disability for the next meeting of that Organization on this subject, with emphasis on disability in the productive age.

1.35 A study on disability in the productive age was begun in 1972 in Belgrade, supported jointly by WHO, the Federal Institute of Public Health of Yugoslavia, the Municipal Institute of Public Health in Belgrade, and the Serbian Institute of Social Security.² Interviews were completed by April 1974 of about 4080 households in one commune of Greater Belgrade and additional information was obtained from the 6062 persons aged 35-54. From them about 1450 persons were selected, equally divided into two groups—those not disabled, and those disabled occupationally and not occupationally—and they were given an extensive medical examination. Refusal rates were exceptionally low, acceptance of the procedures was high, and the quality and reliability of the data were satisfactory. Analysis of the results is under way. In addition an inquiry about the most important agencies providing medical or rehabilitation services and financial assistance to the sample examined was carried out during the year. The findings will permit information on impairment, disability and economic and social conditions and consequences to be linked with information on the utilization and cost of the services.

1.36 In the South-East Asia Region, a team consisting of a medical rehabilitation specialist, a prosthetist/orthotist and a physiotherapist was assembled for the Rehabilitation Centre at Solo, Indonesia. The intention is to upgrade the centre at Solo and to start a new centre in Semarang that will serve as a model for other countries in the Region, the emphasis being

¹ *Wld Hlth Org. techn. Rep. Ser.*, 1974, No. 548.

² *Off. Rec. Wld Hlth Org.*, 1973, No. 205, paragraph 12.19.

on preventive rehabilitation. In Burma assistance was given to the workshop of the Hospital for the Disabled, Rangoon, so that the production of appliances and braces could be stepped up by training technicians for the purpose.

1.37 In the Eastern Mediterranean Region, WHO assistance was given in Iran to the school of physical therapy of Teheran University and the ShafaYahayian Rehabilitation Hospital in training personnel for the development of rehabilitation services throughout the country. In Lebanon, WHO assisted the school of physical therapy at the Ouzai Rehabilitation Centre in developing other rehabilitation centres and in establishing a prosthetic and orthopaedic workshop in Beirut under the direct responsibility of the Ministry of Health. Assistance was also given to Jordan, Saudi Arabia and the Syrian Arab Republic. In Cyprus advice was given on the establishment of centres for spastic and crippled children. The initial steps were taken to assist the Government of Iraq in the development of disability prevention and rehabilitation services.

1.38 In the Western Pacific Region, assistance to the Khmer Republic was given through a UNDP-funded project for which WHO is the executing agency. The National Rehabilitation Centre in that country opened in January, and national staff were appointed and are undergoing training. An assessment of the project carried out in August by UNDP, ILO and WHO reported satisfactory progress. A joint UNDP/UNICEF/ILO/WHO review of assistance in medical rehabilitation to Laos took place early in the year, and it seems likely that a new project will be begun covering a broader area than the present project, due to end in 1975.

1.39 A WHO seminar on the place of *hospitals* in the public health services and their role in African communities was held in Brazzaville in August, and in November the fifth in a series of public health seminars, on the planning and building of health care facilities under conditions of limited resources, was organized in Nairobi by the International Union of Architects, the International Hospital Federation and WHO in collaboration. Most countries of the Eastern Mediterranean Region have a developed hospital system, but in some a review of the administrative structure is required. WHO assistance was provided to Iraq, Jordan, Kuwait and Lebanon in reviewing the organization and management of their hospitals with a view to improving the delivery of medical care services. In the South-East Asia Region, a project on the organization and administration of hospital and medical care services was initiated, a

team consisting of a public health hospital administrator and a medical records officer being set up. A seminar on the organization of medical care in relation to general hospitals was held in Srinagar, India, and attended by participants from eight countries of the Region. Its objectives were to review present trends in the organization of medical care using the hospital as the basic unit; to define the role of the hospital (including coordination and hospital referral systems); to identify problems in the organization, administration and management of general hospitals; to develop guidelines for solving these problems; to propose ways of meeting the needs for education, training and research facilities in general hospitals; and to make suggestions for a follow-up of the seminar. Assistance was given to Bangladesh, Mongolia and Nepal in the designing of health centre and hospital facilities, and to Mongolia in the development of emergency services. In the Western Pacific Region, a team comprising a medical administrator, a non-medical administrator, a hospital architect, and an expert in the supply and maintenance of hospital equipment completed a six-month exploratory study funded by UNDP in which 17 countries and territories of the Region were visited. Negotiations were begun with three countries of the Region for the setting up of training centres for the disciplines involved. The project envisages support over a period of five years for staff training, the management of medical care institutes and the maintenance of hospital equipment, and has awakened considerable interest.

Health services information

1.40 The objective of WHO's programme in health services information is to study, demonstrate and apply methods whereby the information necessary for the proper functioning of health services is supplied to the right persons at the proper time, in an appropriate form and at the lowest possible cost.

1.41 A WHO working group on health information services met in June in Copenhagen and outlined fields in which WHO could usefully promote activities and priorities in the European Region for the collection, storage and dissemination of country information. It stressed the need for close collaboration with national administrations as well as with international organizations in the Region. It also placed emphasis on the development of an environmental health information service. As a first step to this, a study on water pollution information is being prepared. In the Region of the Americas, six countries began developing health information systems, WHO providing assistance in the design of the systems as well as in the training of national personnel.

2. FAMILY HEALTH

2.1 While the broad objectives of the Organization's family health programme remained unchanged in 1974, attention was particularly focused on a more systematic identification of the special needs and problems of the family as a unit, and especially on the vulnerable members of that unit during the critical phases of reproduction, growth and development. That has meant emphasis on the development of family health care both as the core of primary health care services and as an essential part of other services. This, in turn, is leading to a better appreciation of the inter-relationships between and interdependence of infection control, maternal and child health, nutritional health, family planning, and the psychosocial health of the family and its members. Such an approach calls for the cooperation of many disciplines as well as for soundly based country health programming to ensure that family health care is fully integrated within the total health care system. The better to achieve this, the Organization has sought to increase its competence in the formulation, management and evaluation of family health projects through a greater harmonization of the work of its multidisciplinary interregional team on family health, the corresponding intercountry teams in the Regions, and the national project staff. Examples of such an association are to be found in the assistance given to Nigeria and the United Republic of Tanzania in the development of medium-term programmes in family health.

2.2 In the field of maternal and child care, assistance continued to be directed to the strengthening of technical units responsible for maternal and child health in order to meet in a coordinated way the full range of needs throughout the cycle of reproduction, growth and development from conception to childbirth and through childhood, adolescence and youth. Attention was given to research on fetal and childhood growth and development and nutrition, including the standardization of methods for use in such research.

2.3 A WHO Expert Committee on the Evaluation of Family Planning in Health Services met in November in Geneva. It discussed concepts and definitions in family planning and evaluation; reviewed current experience in evaluating family planning in health services, including techniques and procedures for evaluating the need for family planning services from

the point of view of health, the operational aspects and the health impact of these services, and the interaction of family planning and other health services; and developed general guidelines for the systematic selection of evaluation topics, the design of evaluation procedures, and the organization and administration of evaluation.

2.4 As part of continuing efforts to improve inter-agency coordination in the provision of international assistance to countries in the field of family health and family planning, WHO convened a meeting in June at which UNICEF and UNFPA were represented. The consensus of the meeting was that all approaches to country programming and project formulation should be centred upon national initiative. Practical steps were recommended for improving and expediting international assistance, especially more efficient interagency cooperation in the formulation, management and evaluation of jointly assisted projects.

2.5 In view of the food and nutrition problems which have assumed such serious proportions in the world, a reorientation of the approach to its activities in nutrition was undertaken by the Organization during the year, and five priority areas were defined: nutritional surveillance and monitoring at the country level; development of national food and nutrition policies; coordination of nutritional activities with other appropriate activities of the health services; direct measures against nutritional deficiency diseases; and training and education as supportive measures. All these received major attention at the World Food Conference in November in Rome.

2.6 To give effect to resolutions WHA26.35 and WHA27.27 adopted by the World Health Assembly in 1973 and 1974, particular attention was paid to fostering more effective involvement of the community in introducing health education into its activities; to a still closer linkage of health education with major ongoing WHO programmes, such as those concerned with community sanitation and water supplies, sexually transmitted diseases and mental health; and to strengthening the coordination of the Organization's programmes with those of the other international agencies concerned.

2.7 The value of research in forwarding the development of integrated family planning programmes was emphasized during the year in several major conferences. WHO's programme of research and assistance to research in human reproduction, family planning and population dynamics continued to grow in response to the programme needs of the developing countries in particular, but shortage of expertise has limited its scope. To remedy this shortage, specialized research training activities have been established.

2.8 An international conference on "The Physician and Population Change" was held in Stockholm in September in conjunction with the World Medical Association, the World Federation for Medical Education, and the International Planned Parenthood Federation. The conference provided a forum in which physicians could examine the responsibilities and opportunities facing them in relation to the challenge of the present world population situation. The conference approved a "strategy for action" outlining how the physician can most effectively contribute to resolving the problems associated with population change in his own time and place.

2.9 The Organization was much involved in the preparatory activities for the World Population Conference which was held in Bucharest in August; and six background papers were prepared—on health and family planning; the health aspects of population trends and prospects; health trends and prospects, 1950-2000; research on biomedical aspects of fertility regulation and on the operational aspects of family planning; deterioration of the environment and population; and health and human rights. This last paper was presented by WHO at the fourth of the United Nations symposia (three had taken place in 1973) held in preparation for the Conference—on "Population and Human Rights" in Amsterdam in January.

2.10 Two WHO meetings were held in preparation for the Conference, one in Lima in February and the other in Manila in July. At the first of these, the data contained in the papers presenting the health trends and prospects of population change were discussed and updated; at the second, technical experts and senior political decision-makers discussed the health aspects of the draft World Population Plan of Action. Reports of these meetings were circulated to governments.

2.11 The Organization was also represented on the Expert Advisory Committee concerned in drafting

the World Population Plan of Action, and took an active part in preparing the various drafts, ensuring that adequate reference was made to health aspects.

2.12 The World Population Plan of Action approved by the Conference contains strong recommendations that vigorous efforts be made to reduce mortality (particularly infant and maternal mortality), infertility, and illegal abortion, to reduce morbidity due to infectious diseases and malnutrition, and to develop family health services to cover in particular the rural areas.

2.13 As mentioned in Chapter 13, the Organization, in conjunction with UNICEF and with assistance from the Romanian Government, also set up a rural health unit in Bucharest, as an exhibit at the time of the World Population Conference, to stress the importance of auxiliary health workers in primary, including family, health care.

2.14 Much emphasis continued to be placed by the Organization on activities concerned with the coordination of programmes both within the Organization itself and with other agencies—multilateral, bilateral, nongovernmental, and voluntary, including medical students' associations—that also undertake activities in the field of family health, including human reproduction, family planning and population dynamics. Close collaboration was maintained and strengthened with those United Nations bodies that undertake parallel activities, namely, UNICEF, WFP, ILO, FAO, UNESCO, IBRD, and IAEA as well as with the International Confederation of Midwives, the International Federation of Gynecology and Obstetrics, the International Planned Parenthood Federation, the International Union for Health Education, the International Union of Nutritional Sciences, the Population Council, the International Children's Centre and others. The year 1974 was the fifth year of collaboration with UNFPA, whose financial support continued to be given to country, intercountry and interregional activities; formal coordination with that Fund continued through joint consultations such as the Inter-Agency Consultative Committee, and through joint country programming missions.

Maternal and child health

2.15 The interrelation of malnutrition, infection, and the consequences of ill-timed and over-frequent pregnancies continues to exacerbate the health problems of mothers and children, especially in association with adverse social and environmental

conditions and a scarcity of health care. Even in countries where infant mortality rates are minimal, morbidity remains relatively high owing to adverse environmental factors affecting growth and development in the fetal and early neonatal periods and persisting throughout childhood.

2.16 WHO continues to assist countries in their efforts to reduce maternal and child mortality and morbidity, to promote the optimum growth and development of the child, and to improve health during the reproductive cycle. It has defined the following priorities, with research as an integral part of them: (1) the development and strengthening of maternal and child health services within the basic health services; (2) the meeting of needs related to childbearing, growth and development, and to fertility regulation; and (3) health manpower development for maternal and child health care.

Development and strengthening of maternal and child health services

2.17 Maternal and child health is an important component of programmes for the development and strengthening of health services in more than 60 countries. In the African Region the Organization assists 26 health service development projects in which maternal and child health is a major component. In some countries such as Ivory Coast, WHO supports specific maternal and child health projects. Fourteen countries in this Region have fertility regulation programmes or have requested assistance to introduce pregnancy spacing.

2.18 In the Americas the Organization has endeavoured to strengthen maternal and child health and family planning services within the context of country programmes. In Haiti the first phase of the maternal and child health and family planning project has been completed and evaluated, and a proposal has been prepared for the expansion of the programme. The existing projects in Bolivia, Brazil, Colombia, Cuba, Ecuador, and Mexico have been expanded, and a project on maternal and child health and family planning has been initiated in St Vincent, West Indies.

2.19 In the South-East Asia Region, WHO assisted in the planning of programmes for the strengthening of family health within the general health services in Bangladesh, Mongolia, and Nepal. In India, WHO assisted a national advisory group in reviewing existing rural maternal and child health services,

including family planning. The group agreed on the policy of integrating these services within the general health services and developed guidelines that will be included in field manuals for basic health workers in rural areas. The development of a maternal and child health care "package" in Indonesia has been described in the preceding chapter (see paragraph 1.6).

2.20 In the European Region, the year under review witnessed the development and expansion of maternal and child health and family planning programmes in Algeria, Morocco, and Turkey, where efforts are being made to construct adequate systems for the delivery of the appropriate services. Greater responsibility for maternal, child, and family care has been delegated to midwives and nurses in all three countries, and emphasis is being placed on the inclusion of family health and family planning in training programmes for health personnel. On the basis of an evaluation of maternal and child health services in certain countries of the European Region, a working group produced guidelines for the improvement of evaluation studies at the local, regional, and national levels. A similar review of evaluation methods, based on the same study, was made by a conference in Moscow in November on new trends in maternal and child health services, which brought together high-level public health planners, leaders in the fields of family health, maternal and child health, and family planning, and experts representing teaching and research in these fields.

2.21 In the Eastern Mediterranean Region, assistance was provided to Democratic Yemen, the Syrian Arab Republic, and Yemen in establishing maternal and child health programmes including family planning. A similar project in Iraq was completed.

2.22 In the Western Pacific Region, the number of countries and territories receiving assistance in developing their family health programmes increased to 12 with the initiation of projects in New Hebrides and Papua New Guinea. In a study of the role of traditional birth attendants in maternal and child health care (including family planning) being carried out in the Philippines, 32 000 such attendants were identified and registered, marking the completion of the first stage of this work (see also paragraph 1.29).

2.23 In December a WHO task force that met in Geneva prepared the way for collaborative studies on the development of methods for the identification and assessment of high-risk factors affecting mothers and children in various environments. The studies are

aimed at defining a more effective intervention strategy, particularly at the primary care level, with better utilization of manpower and resources and a wider extension of coverage in the delivery of maternal and child health and family planning care.

Health activities focused on specific needs

2.24 The Organization collaborated with the Institute of Child Health, University of London, in the analysis of data on weight at birth, weight and length from birth to three years, and height and weight during adolescence in order to elucidate growth trends in children throughout the world and the factors influencing those trends. The growth chart developed for international use by the Organization in 1973 was tested in Algeria, Chile, Guatemala, India, Ireland, Lebanon, Mexico, Niger, and Thailand and the results are now being evaluated.

2.25 The Organization also supported work on the needs of children during specific stages of development. In relation to perinatal and neonatal development, a scientific group was convened in Geneva in April-May to discuss health statistical methodology related to perinatal events; proposals were made by the group in connexion with the perinatal period (see paragraph 11.30). Assistance was provided to Burma for strengthening and expanding the neonatal services, in which special efforts are being made to organize teams comprising a physician and a nurse for the care of the newborn.

2.26 In June a WHO task force on collaborative research in breast-feeding, in Geneva, reviewed the results obtained in the preliminary testing in four countries of a questionnaire on the frequency and duration of breast-feeding and factors influencing them. Protocols were also discussed for studies of lactation and reproduction, the quality and quantity of human milk, the effects of social factors on breast-feeding, and the effects of the marketing of baby-foods.

2.27 The health problems of preschool and school-age children and measures to prevent handicapping conditions or harmful habits acquired in childhood have been the subject of various programme activities. A consultation was held in Geneva in February on the prevention in children of precursors of cardiovascular diseases that might otherwise occur in adult life. Activities in this field were reviewed and objectives were defined for research on atherosclerosis precursors in childhood. A regional seminar was held in

Mogadishu in July on the provision of health services for the preschool child. Since the potential contribution of day-care centres to the development of children is an important factor in planning for their health care, especially in the preschool years, a review of the literature on this subject has been prepared. An evaluation of school health services in the European Region was begun during the year, and, as mentioned in paragraph 10.44, an interim review was made of the studies in several European countries of chronic respiratory diseases in children in relation to air pollution.

2.28 WHO assisted Burma in a new school health services project, in which national training programmes are being planned for school health teams. In Indonesia a study was undertaken on the impact of the school health programme on the health status and health behaviour of schoolchildren and of the entire community.

2.29 WHO collaborated with the International Paediatric Association in the organization of an international workshop on "The Paediatrician and Population Change". The workshop was held in Buenos Aires prior to the XIV International Congress of Paediatrics, which took place there in October.

2.30 To help reduce child mortality and morbidity from diarrhoeal diseases the Organization developed draft guidelines during the year for the prevention and treatment of such diseases at primary care level by health auxiliaries and by mothers. After practical testing and revision, the guidelines will be widely distributed.

2.31 The trend that exists in some countries towards a small rather than an extended family calls for studies on the changing pattern of needs in gerontological and infant care, on education in methods of family planning, on the effects on the family of domestic and international migration, and on the changing role of women. As a basis for such studies, WHO has begun a survey of the literature and is compiling a list of the projects undertaken by various international organizations in this field.

2.32 New attitudes towards fertility regulation and changes in legislation have led countries increasingly to request specialized technical support and advice in such areas as abortion and sterilization care and in the education of the appropriate health professionals. To be adequately prepared to meet this demand the Organization has sought expert advice. In Geneva

in January a consultant group reviewed recent experience with endoscopy in the more developed countries in relation to conditions in developing countries, from which there have been requests for guidance in establishing endoscopic services not only for diagnosis and treatment but also for the sterilization of women. Specifications for the appropriate equipment were considered and guidelines for training programmes were prepared. The advice of experts from 12 countries was sought at a meeting on pregnancy and abortion in adolescence that the Organization convened in June. After considering the extent of the problem and the short- and long-term sequelae of pregnancy and abortion during adolescence, the meeting defined the requirements for health and social welfare services and for health education and counselling.

2.33 A meeting on education and treatment in human sexuality was held in Geneva in February. This meeting, which was mainly concerned with the training of health professionals in these subjects, was attended by 22 specialists and teachers in human sexuality. It urged that sexual health be recognized as essential to human wellbeing and that personnel in the health and related professions should be given adequate training to enable them to cope with the sexual aspects of health care by means of basic sex education, simple counselling, and referral (see also paragraph 4.69). Further information on training activities relevant to maternal and child health is given in Chapter 3.

2.34 The Organization collaborated closely with UNICEF in a variety of maternal and child health activities, including education and training, country projects, the evaluation of equipment, and the preparation of standard lists of family planning supplies. Collaboration was continued as well with the International Children's Centre, WHO attending the Centre's biennial Technical Advisory Committee and participating in joint activities, particularly those concerned with training and research in maternal and child health. There was also collaboration with the United Nations in preparation for International Women's Year, 1975. One of the preliminary events of International Women's Year was a forum on the role of women in population development, held in New York in February-March, in which WHO participated. The Organization also took part in the United Nations conference on youth and responsible parenthood, held at Lillehammer, Norway, in April.

Nutrition

2.35 The alarming deterioration in the global food and nutrition situation came sharply into focus during the year. Food shortages, high inflation rates followed

by steep increases in the prices of staple foods, the ever-growing number of persons to be fed, emergencies and natural disasters, and a number of other factors all combined to concentrate attention on the problems of hunger and malnutrition, particularly in the third world, and on the need not merely to do more about them, but to do so urgently and better than hitherto.

2.36 It was in an attempt to evolve strategies by which to overcome this critical state of affairs that the World Food Conference was convened by the United Nations in Rome in November. As well as attending the Conference itself, WHO took an active part in the three meetings of the Preparatory Committee, stressing the important health aspects of undernutrition and malnutrition. The recognition that these received is manifested even in the title of the declaration adopted by the Conference—"Universal Declaration on the Eradication of Hunger and Malnutrition"—and in the substance of a number of the resolutions adopted. The resolution on policies and programmes to improve nutrition, for instance, not only recommends the establishment of a joint FAO/WHO/UNICEF global nutrition surveillance system and the further development of the FAO/WHO food contamination monitoring programme (see paragraphs 10.75-10.76), but also emphasizes the importance of specific measures against deficiency diseases, such as xerophthalmia and anaemia, and of nutrition education. It calls, in addition, for the development of national intersectoral food and nutritional plans with international assistance and for the strengthening of basic health services and the improvement of environmental conditions, including rural water supplies and the elimination of waterborne diseases. In other resolutions, the Conference urged governments to take all possible measures for the promotion of breast-feeding and to adopt rational population policies.

2.37 As a result of a review conducted earlier in the year by the Organization, the nutrition activities hitherto pursued by WHO in its assistance to many countries were reoriented with the aim of increasing their effectiveness. Five priority areas were defined: nutritional surveillance and monitoring, the development of national food and nutritional policies, the coordination of nutritional activities with other activities of local health services, direct measures against specific deficiency diseases, and nutrition training for medical and health personnel. WHO activities within these areas are described in the following paragraphs (except for training, for which see Chapter 3).

Nutritional surveillance

2.38 During the past few years, WHO has sponsored collaborative studies on anthropometry in various parts of the world in an attempt to develop a simple method of nutritional monitoring so that health services can keep the population at risk under continuous nutritional surveillance, identify those needing immediate attention, and, when possible, predict any sudden deterioration of the nutritional situation so that preventive measures may be taken. WHO-sponsored anthropometric surveys for the assessment of trends in nutritional status are continuing in several countries. In 1974, data collected in 11 countries were tabulated and prepared for publication.

2.39 During the year WHO assisted in a number of national nutrition surveys—for example, in Tunisia, in drought-affected areas of Senegal and other parts of the sub-Saharan Sahel zone, and in Nepal, where a high prevalence of protein-calorie malnutrition was found. Assessments were made of the food and nutrition problems in Algeria, Mongolia and Turkey, and biochemical studies were undertaken in Madagascar to evaluate the nutritional status of hospitalized children and of selected population groups, both urban and rural.

2.40 In several African countries WHO helped to establish a system of nutritional surveillance through health centres, aimed at the detection of protein-calorie malnutrition. Surveys of the food and nutrition situation were completed for 15 more African countries, bringing the total number of countries covered to 33, including those in the drought-affected areas of West Africa, which received priority attention.

National food and nutrition policy

2.41 The Organization is seeking to promote, at local, national, and international levels, a strong nutrition policy with progressive development of competence in planning and evaluation as continuing processes. A joint FAO/WHO Expert Committee on Nutrition, meeting in Rome in December, provided important guidelines that will facilitate the adoption of such a policy by national governments. An earlier opportunity to discuss food and nutrition policies was provided by two FAO seminars, one held in New Delhi in February and the other in Lusaka in June, in which WHO participated.

2.42 In Indonesia, an interdisciplinary team from the Massachusetts Institute of Technology, USA, collaborating with WHO, assisted in preparing the basis for a national food and nutrition policy. The most urgent problem facing the country is the very high frequency of protein-calorie malnutrition among children of all ages. The team proposed various possible approaches to this problem and suggested certain modifications in existing agricultural and food policies.

2.43 At a meeting in September of the Joint FAO/WHO/OAU Regional Food and Nutrition Commission for Africa—the first full meeting of the Commission—satisfactory progress was made towards the coordination of food and nutrition programmes in African countries.

2.44 National seminars on the implementation of food and nutrition policies were held in Chile, Colombia, Costa Rica, Honduras and Jamaica. In other countries in the Region of the Americas—particularly in Central America and the Caribbean—WHO provided assistance in the initial stages of food and nutrition policy planning, always in close collaboration with ECLA, UNICEF, FAO, and UNESCO and sometimes through the agency of the Caribbean Food and Nutrition Institute and the Institute of Nutrition of Central America and Panama.

Nutrition and local health services

2.45 The policy review referred to in paragraph 2.37 above has led to a new strategy for the implementation of nutrition intervention programmes. Experience has shown that WHO's work in this field has not had the impact that would be desired. In future, Member States will be encouraged to integrate nutrition activities with basic health services, however rudimentary they may be in some areas. It has been demonstrated in pilot projects that even a bare minimum of nutrition activities carried out by primary health workers, if associated with health education, immunization, mother and child care, and family planning, can have a considerable impact in a short time; and it should be possible greatly to reduce the prevalence of protein-calorie malnutrition and to prevent most cases of kwashiorkor and marasmus. In many African countries, however, there is as yet hardly any systematic nutrition activity in the health services, and little progress has consequently been made in dealing with nutritional problems. UNICEF and WHO have developed a joint strategy on nutrition activities

through local health services, for use in the guidance of their field workers.

2.46 With the advice of WHO several countries in the Americas revised their maternal and child health programmes to include promotional, preventive, and curative nutrition activities, and these new programmes are now being implemented. In the South-East Asia Region, WHO assisted in the development of a programme in public health nutrition in Sri Lanka. In the Eastern Mediterranean Region, an intercountry seminar on food control was organized by WHO in collaboration with FAO and UNICEF in Beirut in March. The discussion centred on inadequate quality control in the production and sale of foods, which is an important factor in the development of malnutrition. At a seminar on the provision of health services for the preschool child, held in Mogadishu in July, special attention was given to the training in basic nutrition of health personnel working at the local level. Considerable progress was made in the establishment of nutrition units at national and provincial levels in Afghanistan and Sudan, and the integration of nutrition work into routine health service operations is proceeding steadily.

Measures against specific deficiency diseases

2.47 Protein-calorie malnutrition, xerophthalmia, endemic goitre and cretinism, and anaemia continue to be major public health problems in almost all developing countries. In close collaboration with FAO and UNICEF, WHO increased its assistance to countries in overcoming these problems with the help of new methods based on the use of unconventional sources of protein, peanut flour, cottonseed flour, and foods fortified with amino acids and vitamins.

2.48 In the past 20 years eight expert groups convened by FAO and WHO have reported on human energy requirements (calories) and essential nutrients—proteins, the various vitamins, calcium, iron, iodine and fluorine. However, these long reports contain much highly technical matter that is not easy reading for those with a limited knowledge of the subject. A handbook has therefore been published¹ that sets forth the specific recommendations for nutrient intakes made by these expert groups and provides a commentary in terms readily understandable to food admini-

nistrators, agricultural planners, and applied nutritionists. The book should also be useful to teachers in secondary schools and colleges and to everyone concerned with health education.

2.49 WHO supported the efforts made by the National Institute of Nutrition in Mexico City and the University of the West Indies in Jamaica in collecting and analysing information on protein-calorie malnutrition. Preliminary results suggest that in Jamaica and Mexico protein-calorie malnutrition occurs three times more frequently in the age-group 0-18 months than in the age-group 19-60 months, partly because of the early age of weaning. The University of Cochabamba, Bolivia, joined WHO's collaborative study on protein-calorie malnutrition, which is being carried out in four countries in different areas of the Americas according to a common protocol.

2.50 The Protein-Calorie Advisory Group of the United Nations System, which met in Rome in June, considered the problem of nutrition strategies and discussed the possible indicators that could be used to assess nutritional status. It may be noted that this group's sponsoring agencies (the United Nations, FAO, WHO, UNICEF, IBRD) have expanded its terms of reference to reflect the wider ramifications of malnutrition and to permit the group to deal more effectively with the growing range and volume of activities of the United Nations system in the nutrition field; the official title of the group (formerly the Protein Advisory Group of the United Nations System) has been changed in consequence.

2.51 At an interregional seminar held in Cairo in November on nutritional problems of the weaning period with particular reference to weaning foods, senior health officials from several African and Eastern Mediterranean countries discussed the public health measures that might be adopted to overcome problems of the weaning period. They confirmed the need for the new WHO strategy based on the integration of nutrition activities with basic health services (see paragraph 2.45).

2.52 Protein-calorie malnutrition being the most serious problem of the weaning period, WHO and UNICEF continued their efforts to promote suitable weaning-food mixtures, both domestic and commercially processed. A plant in Egypt began the full-scale production of Supramine during the year, and a plant for the production of Shadamin was commissioned in Iran. Preliminary investigations have been made in Morocco and Turkey into the acceptability and marketing of weaning foods, and a sym-

¹ Passmore, R. et al. (1974) *Handbook on human nutritional requirements*, Geneva, World Health Organization (*Monograph Series*, No. 61).

posium on the marketing and distribution of protein-rich vegetable mixtures was held in La Paz. Two mixtures produced in India and St Lucia, West Indies, have been clinically tested. With WHO assistance and in collaboration with the Inter-American Development Bank, the Institute of Nutrition of Central America and Panama (INCAP) implemented a project in Haiti aimed at the production of high-protein weaning food. Feasibility studies on a similar food were carried out in Chile and Honduras with WHO technical assistance. Preliminary studies in this field have also started in Bolivia, Colombia, the Dominican Republic, and Panama.

2.53 Research into the toxic factors present in broad beans, carried out in Israel, Lebanon, and the United Kingdom with WHO assistance has yielded methods of detoxication that are undergoing preliminary trials.

2.54 The school and hospital feeding programmes implemented in Yemen a few years ago in close collaboration with FAO and the World Food Programme have now been considerably improved and the services extended to Democratic Yemen and Sudan. WHO collaborated with FAO, UNICEF, and WFP in supplying food to the drought-affected areas of Ethiopia and the sub-Saharan Sahel countries, to the flood-affected areas of Bangladesh, Pakistan, and Somalia, and to Honduras after the devastating hurricane.

2.55 WHO is greatly concerned at the decline of breast-feeding in most developing countries and its replacement by bottle feeding—often in unhygienic environments and leading to disastrous gastrointestinal infections and malnutrition among infants and young children. The Twenty-seventh World Health Assembly in May adopted a resolution reaffirming that breast-feeding has proved to be the most appropriate and successful nutritional solution for the harmonious development of the child. The Organization is coordinating and advising research programmes in many parts of the world on the factors affecting breast-feeding practices and on ways and means of promoting such practices. The Protein-Calorie Advisory Group of the United Nations System, in collaboration with WHO, organized an international seminar in Singapore in November, at which paediatricians, obstetricians, and other medical personnel exchanged views with manufacturers of processed infant foods.

2.56 In the international collaborative study of the interrelationships between nutritional status and immunological function,¹ work carried out during

the year confirmed earlier indications that malnutrition affects mainly the T-cell function and demonstrated a return to normal function after refeeding. Some of the T-cell and phagocytic defects were reproduced *in vivo* and *in vitro* by administration of glucocorticosteroids, the plasma levels of which are increased in malnutrition. It was found that iron supplementation corrects an observed defect in the killing of bacteria after phagocytosis. These findings may prove to have practical implications for the treatment of infections and the design of immunization schedules in health programmes in malnourished populations.

2.57 Xerophthalmia, resulting in partial or total blindness and commonly occurring in children, is another public health problem of global importance. WHO, in collaboration with UNICEF, is closely involved in sponsoring pilot trials of massive-dose prophylaxis against xerophthalmia and in implementing this approach in national programmes. In its second year of operation the UNICEF/WHO-assisted programme in Bangladesh for the control of vitamin A deficiency in preschool children continued to achieve good coverage of these children, who received massive doses of the vitamin in order to prevent xerophthalmia. Assistance was given to Brazil, Colombia, the Dominican Republic, El Salvador, Haiti, Nicaragua, and Panama in carrying out pilot trials to determine the best way of reaching preschool children in those countries with six-monthly massive doses of vitamin A. The Organization also assisted El Salvador and Honduras in a programme for fortifying sugar with vitamin A and in incorporating this programme into the national plans for socioeconomic development. Assistance in the detection, treatment, and prevention of xerophthalmia was provided in Haiti, Niger, Senegal, and Upper Volta. Support has also been given to a cost/effectiveness study of various approaches to the prevention of xerophthalmia in Cebu, Philippines. In Maldives, WHO supplied teaching materials for the training of health personnel in the early diagnosis of xerophthalmia. In collaboration with USAID, the Organization held a meeting of investigators in Jakarta in November to identify the main areas for research and action programmes in the prevention of vitamin A deficiency.

2.58 The WHO-supported study initiated five years ago in Delhi and Vellore, India, on the treatment and prevention of nutritional anaemias in pregnancy was completed. It was found that 120-240 mg per day of elemental iron administered together with 1 mg per day of folate were necessary to control anaemia during pregnancy in Indian women. Studies in Thailand, the USA, and Venezuela on the absorption of iron from

¹ *Off. Rec. Wld Hlth Org.*, 1973, No. 205, paragraph 5.18; *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 5.7.

the diet as a whole have resulted in an improved method for the determination of available iron. This method will greatly facilitate a trial of the iron fortification of food that is being carried out in Venezuela. A detailed survey was made of the incidence of nutritional anaemias in Zanzibar, United Republic of Tanzania. In collaboration with IAEA and USAID, WHO convened a meeting of investigators in Geneva in October to review the progress made in the collaborative programme of research on the prevention and treatment of nutritional anaemias and to draw up plans for the future.

2.59 The incidence of endemic goitre has been greatly reduced by salt iodization programmes adopted by most of the affected countries. The Organization supported studies on the effectiveness of injections of iodized oil in the prevention and control of endemic goitre and cretinism in Bolivia and Ecuador. The Bolivian project, being carried out in collaboration with the Medical Research Council, United Kingdom, and the Research Corporation, USA, includes studies on the effects of iodine deficiency and its connexion with the mental performance of schoolchildren.

Health education¹

2.60 Health education work is inevitably concerned with the problems of community involvement and consumer participation in health action, and workers in health education cooperate with various programmes of disease prevention or health promotion to stimulate the voluntary and continuing collaboration of the consumer or potential consumer. This is done on the premise that desirable permanent change in social behaviour rests, in the last resort, on reasoned choice rather than coercion.

2.61 Since the main purpose of health education is to inform, to motivate and to stimulate participation and action in respect to health, the activities of WHO involve:

- (1) providing assistance in planning, organizing and evaluating the health education component of health programmes;
- (2) developing manpower for health education;
- (3) stimulating and facilitating studies and research in health education and related social sciences; and

- (4) advising on health education aspects of country activities undertaken jointly by WHO and other United Nations agencies.

2.62 These points were clearly brought out in the programme review of health education activities made by the Executive Board at its fifty-third session in January and presented in May to the Twenty-seventh World Health Assembly.² The review gave an account of the Organization's work in health education over the past 25 years and also referred to the contribution to health education activities of WHO expert advisory panels, scientific meetings, study groups and field experiences, and to the value of the collaboration established with other organs or agencies of the United Nations and with nongovernmental organizations, particularly the League of Red Cross Societies and the International Union for Health Education. In resolution WHA27.27, the World Health Assembly expressed satisfaction with the trend of the Organization's activities in health education and recommended that they should be intensified and greater support given to Member States in that field.

2.63 In another resolution, WHA27.28, the Health Assembly, recalling the declaration by the General Assembly of the United Nations (resolution 2037 (XX)) on the promotion among youth of the ideals of peace and recognizing the important role of health education in that undertaking, deemed it necessary for the Organization, *inter alia*, to explore and promote new approaches in the health education of mothers, children and young people, especially for their protection against the harmful factors of modern life.

2.64 The comments made and the questions asked during the discussions of the programme review at both the Executive Board and the World Health Assembly showed the interest taken by Members and delegates in the role of health education in stimulating community participation for health improvement. The Organization has produced a working document on possible approaches for improving community participation in health action and has outlined methods to improve consumer participation in national health planning, programmes and management.

2.65 WHO and UNICEF are actively exploring ways and means of furthering community participation, especially in the field of rural water supplies and environmental health generally. Improvement in this

¹ See also paragraph 4.69 concerning health education in the control of the sexually transmitted diseases, and paragraphs 7.80 and 7.81 on smoking and health.

² *Health education: a programme review*, 1974, Geneva, World Health Organization (WHO Offset Publication No. 7).

respect is already noticeable in a number of countries. In Bangladesh, the plan of operation of the community water supplies project has a very strong health education component. In Indonesia and Nepal, the services of health education specialists are continuously utilized in environmental health activities, especially the improvement of rural water supplies and excreta disposal. In Pakistan, health education was a component in the efforts of the Public Health Engineering Department to encourage a more active participation of the public in making use of and developing water supplies in both rural and urban areas.

2.66 In the Gilbert and Ellice Islands, WHO assisted a project that is attempting to meet the problem of high infant mortality due to the high endemicity of gastroenteric infections, by improving water supplies, training manpower and undertaking the health education of the public.

2.67 In the Region of the Americas, the Organization assisted a number of governments in the consolidation, reorganization and reorientation of their health education activities. Advisory services were provided in 21 countries or territories. In some, particularly in the Caribbean area, technical assistance was given for the identification and analysis of existing barriers to health programming. In Trinidad and Tobago and some other countries, the emphasis was on developing management skills and manpower. In order to evaluate the experience obtained in the development of five field projects, the First National Workshop of the Experimental Centres on Development of Health Services with Community Involvement was held in Brasilia in June; it was attended by 42 representatives of 12 national agencies.

2.68 In attempting to strengthen their health services, many countries are realizing that more attention must be given to social, cultural and behavioural problems and to the exploration of alternative methods for the delivery of health care. The significance of the health education component, in this connexion, was clearly brought out in a study of alternative approaches to meeting basic health needs of populations in developing countries that was discussed at a meeting organized jointly with UNICEF (see paragraph 1.17).

2.69 In South-East Asia efforts to reorganize or expand current health education services in Member countries have led to a recognition of the need to develop health education specialists and related manpower, audiovisual and communications media support, research, school health education and other

essential activities. This type of assistance was given in the State of Maharashtra, India (see also paragraph 2.79 below). In Bangladesh the Government was helped in studying the problems and needs in health education. Recommendations were made for better coordination of the health education resources available under malaria control and family planning programmes, specific steps to improve health education activities were outlined, and the need for intensive job-oriented training in health education for all existing health and family planning personnel was emphasized. The curricula for school and teacher training institutions were reviewed and health education was included where necessary.

2.70 In the Maldives, the Organization assisted in reviewing the health education component of the ongoing programmes and in planning, conducting and evaluating a multidisciplinary workshop in health education. One of the recommendations made was for the formation of a group consisting of hospital staff, nurses and other selected personnel to advise the Health Education Bureau on the needs for staff training and for collaboration with other ministries in health education activities. In Sri Lanka attention was given to developing a unit for the production of health education material and to the need for better coordination of activities and for training of the staff.

2.71 In the African Region, a number of countries have given priority to the development of health education, and in several national health services additional health education posts have been created. In Liberia and Togo, health education programmes were reorganized, specific objectives were formulated and further plans drawn up. In Zambia, a survey was undertaken to obtain information on the extent and scope of health education activities in 89 health centres in five provinces. In Mauritius, where a study was made of existing health education services and facilities and of the health education component of the various programmes concerned either with education or with health, sessions were organized with village development officers and a more systematic use was made of the communication media and especially of television and radio. In Liberia and Mauritius, as well as in Kenya and Sierra Leone, coordination committees were set up to facilitate collaboration and the joint planning of health education activities by the various ministries concerned (health, information, education, agricultural extension etc.). In four of the above-mentioned countries, Liberia, Mauritius, Sierra Leone and Zambia, and also in the Central African Republic, Gabon, Malawi and Mauritania, assistance

was provided in improving the health education activities of field staff.

2.72 In the European Region, an analysis of the facilities and resources in the field of health education and social sciences which began in 1973 has already shown that the situation in many countries needs improvement in regard to organization, training and applied research. In the absence of a central administratively responsible body in a number of European countries, health education programmes are planned and implemented in an uncoordinated manner. In November, the Organization convened a symposium on the preparation of health personnel in health education with special reference to postgraduate education programmes. It was held in Cologne and was sponsored by the Government of the Federal Republic of Germany in close cooperation with the Federal Centre for Health Education.

2.73 In the Western Pacific Region health education continues to be integrated in various programmes. In Laos, Malaysia and Tonga, it forms part of maternal and child health care and family planning activities. In Malaysia, assistance in health education was continued to the Ministry of Health, the Ministry of Education, the Public Health Institute and the Rural Health Institute. In Papua New Guinea, special assistance was given to meet the need for further training and to strengthen the facilities and coordination of school health education and community health education, especially in respect to nutrition and the control of tuberculosis and malaria.

2.74 As mentioned in previous annual reports, the financial support of UNFPA has been instrumental in strengthening the basic health education services and manpower required for family planning activities both within WHO and in a number of countries.

2.75 Health education was discussed at a number of meetings held during the year in collaboration with other United Nations agencies or bodies. Among them was a meeting arranged by ECAFE (now ESCAP) in Bangkok in January on the evaluation of educational materials in family planning programmes; it was attended by experts from 11 countries as well as from UNESCO, WHO and the Asian Mass Communication and Information Institute. The purpose was to make a further review of the experience gained in the production of materials for education in family planning.

2.76 WHO collaborated closely with FAO, especially on the project for interdisciplinary collaboration in the

education aspects of family planning and better family living. The Organization continued to work with UNESCO in a project in the Philippines on research, development and training in family planning communication. In this project, mothers' clubs in selected *barrios* of Negros Oriental have been organized to promote family health and welfare, with the assistance of the respective rural health units and the Provincial Health Office. In Indonesia and in Sri Lanka, also, it was found that mothers' clubs create a very good atmosphere for education and for the inculcation of health practices.

2.77 In the South-East Asia Region, WHO assisted the governments of Burma, India, Indonesia, Nepal and Sri Lanka with regard to school health education and family life education. In most of these countries help was given to departments of education in assuming responsibility for school health and family life education; and in some, programmes were developed for primary and secondary schools, suitable text books were prepared, and teaching on health and family life was introduced as an integral part of the school curriculum. Efforts were made to prepare teachers to give lessons in health and family health. In Nepal, the Government was assisted in introducing a school health education unit in the Ministry of Education.

2.78 Teacher education activities ranged from in-service training to the development of curricula for graduate programmes of teacher education. In Maharashtra State, India, for example, health and family health education became a part of the curriculum for the Bachelor of Education and Diploma in Education programmes of the State Institute of Education.

2.79 WHO provided advisory services to Maharashtra State as part of the school health education and family health education project in India. It recommended that the School Health Committee should cover all activities in school health and population education, and that the curricula and the text books should be revised to correspond with the needs. It also recommended that the activities of school health clubs should be encouraged, that district health education units be established and, finally, that the health education resources and activities in the fields of malaria, BCG, leprosy, cholera and environmental health be combined.

2.80 In the Region of the Americas, a national seminar on school health education was held in Argentina in July, with the participation of 60 persons,

including the representatives of the health and education sectors at federal and provincial levels. At this meeting conclusions were drawn from the experience obtained with the new health education programmes included in the primary and secondary school curricula. In Brazil, school health education programmes were under way in the states of Bahia, Guanabara, Minas Gerais, Paraná, Pernambuco, Rio Grande do Sul, and São Paulo; a guide on health programmes in the educational system of Brazil was prepared to orient the teaching of health at the basic level of general education. In Chile, the Ministry of Education was assisted in developing a long-range plan of health education and family life education teaching at all levels of the Chilean educational system. A series of school health education courses were held in Ecuador for a total of 145 teachers. A two-day seminar on school health education was conducted for the teachers of Tortola (British Virgin Islands). Consultative services were provided in St Kitts, St Vincent, St Lucia, and Dominica to help develop the health education aspects of the school curriculum.

2.81 In the Eastern Mediterranean Region, a seminar on school health services in Iraq emphasized the health education content of the school programme. In Ethiopia, special emphasis was placed on teacher training programmes in the field of health education, and health education in schools was developed as part of a smallpox eradication project. The success achieved in the mass vaccination programme owes a great deal to systematic efforts in health education.

2.82 Health education plays a significant part in the control of communicable diseases in a number of other countries. In Sri Lanka, for instance, the Organization assisted with the health education aspects of cholera control by emphasizing needs for personal hygiene, utilization of sanitary facilities and early treatment.

2.83 With regard to noncommunicable diseases, the Organization has been assisting the community programme for cardiovascular disease control in North Karelia, Finland, of which health education is an integral part. It is expected that evaluation of the programme will produce valuable data which, together with experience gained, can be used in community-based projects in other countries. WHO also took part in a working party on health care and social work for old people living at home, which was organized by the Council of Europe in Strasbourg in April. Health education was one of the main items specified in the resolutions of this working party.

2.84 In two research projects, one in Indonesia and the other in Sri Lanka, assistance was given for behaviour studies as part of the overall plan for the development of health and family planning education. Reviews were made of progress in implementing earlier recommendations, and assistance was given in preparing summaries of completed or nearly completed studies. The major recommendations in Indonesia were that a practicable method of disseminating relevant information to the cooperating agencies should be developed and that health education personnel competent in research should be trained.

2.85 It is very gratifying to note that the first research project conducted by the National Institute of Health Administration and Education (NIHAE), New Delhi, under the title "Health education status in teaching hospital and associated health centre set-up", for which WHO had provided very modest financial support, has been internationally recognized and received the second prize in an award by the Beryl J. Roberts Memorial Committee of the University of California, Berkeley, USA, for a systematic and practical approach to the problem.

2.86 During the latter part of 1973 and in 1974, the initial phases were completed of five research projects for which reports have already been submitted, or tabulation and analysis of data are being completed. They are as follows: (1) a study of the impact of activities of primary health centres on community health practices including family planning as perceived by the consumer, in collaboration with the Centre of Social Medicine and Community Health, Jawaharlal Nehru University, New Delhi; (2) a study of adoption of modern health and family planning practices in a rural community, carried out with the Central Health Education Bureau, Ministry of Health and Family Planning, New Delhi; (3) a study of the use of health education for the promotion of child health using the hospital and community setting, carried out by the Department of Social and Preventive Medicine, University of West Indies, Jamaica; (4) research on the influence of children upon the adoption by their family of health practices they have learned in school, undertaken by the School of Public Health, University of São Paulo, Brazil; and (5) a study of some behavioural problems in the sequential process leading from awareness to adoption in family planning, by the School of Public Health, Seoul National University, Republic of Korea.

2.87 The reports or preliminary reports received concerning these WHO-assisted collaborative research

activities show that in some cases certain of the premises upon which health education has been based have been reaffirmed, but in others a number of assumptions have come into question. In the second study mentioned a very close association was found between perceived need and adoption, and it was shown that if a need is felt in health, the people will try to satisfy it regardless of the effort required. The findings of this research project and those of the Seoul School of Public Health refute the assumption that the adoption of health practices necessarily follows the accepted pattern of innovation in agriculture, namely, a sequential process of awareness, information, trial and adoption. Unfortunately, a number of programmes concerned with the health education component of family planning have followed that pattern in the belief that it would be just as effective in the field of health. Another very interesting finding of the Central Health Education Bureau's study was that the leaders in the community were no more inclined to accept innovations in health matters than were other members of the same community.

2.88 The study in São Paulo, Brazil, has thrown light on still another assumption—that schoolchildren could be agents of change, i.e., that they would carry the health message home and influence their families. This was not, in general, substantiated. It was found that, although parents of the children who had received education on nutrition had more knowledge than those of children who had not, the greater knowledge did not necessarily result in behavioural change. It seems, therefore, that any change in behavioural patterns must come through coordinated efforts in both school and community and involve the parents themselves.

2.89 The research project in Jamaica brought to light the urgent need for a more dynamic education of young mothers concerning the nutrition and immunization of their children. A study undertaken with the Faculty of Public Health, University of Teheran, on the knowledge, attitudes and behaviour of secondary school biology teachers regarding family planning has defined the retraining that they need before they are given the responsibility of teaching family planning as part of health programmes in Iran.

2.90 A significant finding of the research project in the Centre of Social Medicine and Community Health, Jawaharlal Nehru University, was that response to major medical care problems is very much in favour of the modern system of medicine, irrespective of social, economic, occupational and regional considerations.

This goes contrary to the popular belief that, in general, rural people tend to favour traditional systems of healing. The study shows, however, that the major obstacles to the wider utilization of modern medical and health facilities lie in their unavailability and the attitudes of many health workers. The results of the study also suggest that, to be successful, family planning workers and family planning work should be closely linked with community health activities.

Human reproduction

2.91 The health sector has been one of those most immediately affected by current awareness of problems relating to human reproduction, and particularly to the regulation of fertility, since it has been expected to respond instantly to growing demands for services. Many problems have emerged for which the only hope of finding a solution is through research. The task before the providers of those services is formidable. They are required to develop methods, approaches and service structures that can reach most men and women of reproductive age in a community and can go on reaching them.

2.92 In June the Advisory Committee on Medical Research reviewed the activities and mechanisms of the WHO research programme on human reproduction and family planning¹ since its beginning ten years ago. The value of research in this field has been stressed by the World Health Assembly in several resolutions dating back to 1965. Research is promoted by WHO on the biomedical, epidemiological and operational aspects of family planning, sterility, pregnancy, lactation, and other aspects of reproductive health and disease. Because of its scope, its collaborative multinational approach, and the great possibilities it offers for producing technology and guidance for services relevant to the needs of developing countries and for increasing their research potential, the programme aroused considerable interest when it was presented at a WHO meeting on health and family planning in Manila in July, which was attended by ministers and senior officials of 17 governments, and also at the 24th Conference of the Pugwash Movement in Baden, Austria, in August.

2.93 During 1974 the programme grew appreciably owing to the increased contributions made to it by several Member States and agencies through the Special Account for Medical Research and UNFPA.

¹ Kessler, A. & Standley, C. C. (1974) *WHO Chronicle*, 28, 537-548.

The health rationale for family planning

2.94 Analysis of the data from centres in five of the nine countries that are collaborating in an epidemiological study of the effects on family health of different patterns of family formation was completed. These data, from India, Iran, Lebanon, the Philippines and Turkey, have supported one of the main hypotheses of the study: that higher infant or child mortality is associated with an increase in total parity but not with large family size. An association between increased parity and deterioration in maternal health was not demonstrated, except for greater risk of uterine prolapse. The studies also clearly showed the tendency of couples, throughout reproductive life, to replace any child loss by additional births. It remains to be seen whether the analysis of the data from the centres in Colombia, Egypt, Pakistan, and the Syrian Arab Republic bear out these and other findings. Since the hypotheses under study provide the basis for the health rationale for family planning, it is intended to undertake prospective studies to confirm these findings by determining whether a causal relationship, rather than an association, exists between the parameters in question.

2.95 Another argument frequently advanced for family planning is that unwanted pregnancies have harmful psychological effects. This argument has been partly substantiated in a WHO-supported, case-controlled study in Prague on the growth, development, behaviour and social integration of 300 children born of mothers who had been refused abortion; this has shown a slight but consistent trend for such children to have more school problems and learning difficulties and to be more asocial in their behaviour than the controls.

Current methods of contraception

2.96 Modern fertility control methods have usually been tested in women from the more developed countries. Public health authorities in many developing countries have questioned whether the same dosage of contraceptive drugs or shape of intrauterine devices would be equally suitable for women who differ in body size, diet, childbearing patterns, work habits and genetic constitution, and who frequently suffer from malnutrition and endemic diseases. Lack of information on these questions has led to a number of contraceptive methods being held back for fear of their possible ill-effects. Much effort has been devoted during the past two years in the WHO programme to the assessment in developing countries of currently available methods.

2.97 *Hormonal contraception.* A first step has been to obtain in different populations good baseline data on normal levels of reproductive hormones, and data on changes in these levels following the use of different preparations. WHO-sponsored projects, for instance in Egypt, Iran, Pakistan, Thailand and Turkey, are providing such information for the first time.

2.98 Other studies are designed to investigate the frequency and pattern in the populations of several developing countries of the side-effects that have been reported in North American and European women—for example, those of several oral and injectable contraceptives on blood pressure, carbohydrate metabolism and liver function. The occurrence of these effects in women in developing countries is being investigated through in-depth clinical studies and through analysis of the records of family planning clinics and contraceptive testing units.

2.99 The publicity given to thromboembolic incidents as a side-effect of certain contraceptive drugs has deterred many family planning authorities from actively using them in their programmes. A WHO study in Thai women has confirmed the clinical impression that thromboembolism is rare in certain Asian female populations and that therefore this complication may not be important.

2.100 The widespread presence of malnutrition and endemic parasitic diseases has raised the question of their possible interaction with contraceptive agents. In a collaborative study, such effects in malnourished women are being investigated in relation to some aspects of the metabolism of proteins, lipids, carbohydrates, vitamins and trace elements. In Egypt, a study is being made of the question whether additional risks to liver function exist when hormonal steroids are taken by women suffering from schistosome infestation, a common condition in many areas of that country.

2.101 The return of fertility after use of steroidal contraception, particularly in the form of injectable preparations, is a matter of considerable concern that is being investigated in several WHO projects through endocrinological studies, by following up the return of menses and pregnancy in Pakistani women, and by analysing a unique collection of records in northern Thailand. The preliminary results of this latter investigation, as well as those of several other WHO-supported studies on human reproduction, were presented in August to the International Epidemiological Association's scientific meeting, at the University of Sussex, United Kingdom.

2.102 *Intrauterine devices.* Comparative studies of the effectiveness, side-effects and continuation rates of both copper-bearing intrauterine devices (IUDs) and plain plastic devices of different designs are being conducted in several projects supported by WHO in India. The two-year study¹ of three plain IUDs, two of which have a novel design, being carried out in a rural area of Thailand by a WHO research team, has so far shown few differences between the three designs. A possible toxicological hazard from copper-bearing IUDs may arise from the systemic absorption and storage of copper in the kidney, liver or other organs; a collaborative study of the question in baboons is being assisted by WHO in Mexico, Sweden and the USA.

2.103 *Sterilization.* In view of the increase in the demand for tubal occlusion and vasectomy in a number of countries, different medical approaches to sterilization—abdominal and vaginal—and different techniques—surgical and endoscopic—are being studied. The studies are also concerned with the relative merits of local and general anaesthesia and their effects on somatic sequelae.

2.104 Little is known about the possible psychological consequences of sterilization in either men or women. Family planning administrators are asking for some way of screening out individuals who might suffer from adverse psychological effects. A research project has therefore been started in Singapore to assess the incidence of postoperative psychological complications, study their nature, and test the predictive power of a screening system.

Development of new methods of fertility regulation

2.105 One aim of WHO's Expanded Programme of Research, Development, and Research Training in Human Reproduction is to develop a variety of new, safe, acceptable and effective methods for fertility regulation that can be easily applied in settings that differ socially, culturally and in terms of the services available. Although current methods represent a considerable advance over those available two decades ago, many are still relatively crude and associated with side-effects. They fail to meet the needs of many groups of potential users, or may be difficult to apply in many service settings.

2.106 The Expanded Programme is funded by voluntary contributions to the Special Account for Medical Research, which rose from US \$6.2 million in 1973,

the second year of operation of the programme, to US \$8.1 million in 1974. The donors—Canadian International Development Agency; Danish International Development Agency; Department of International Cooperation, Finland; Norwegian Agency for International Development; Swedish International Development Authority; International Development Research Centre (Ottawa), and the Ford Foundation—met with other interested agencies in November to review the progress and future plans of the programme.

2.107 The main increase in the activities of the programme has been in the work of the task forces for collaborative research. Methods under development include the use of drugs for fertility regulation in men and women, contraceptive devices, chemical and surgical procedures for sterilization, and antifertility immunizing agents. In choosing the methods to be developed, several criteria are used: potential demand, probability of success in development, time and expense likely to be involved, extent of research by other groups and by industry, potential for collaboration. The results obtained in task force projects during the year have made it possible to take decisions on the expansion of some lines of research, the continuation of others as planned, or the termination of certain projects. During 1974 about 250 scientists from 45 countries have taken part in the programme's task forces. Collaboration has also continued with several pharmaceutical firms.

2.108 *Methods for the regulation of ovum transport.* The work of the task force concerned with this research, from which many results have become available, illustrates the variety of lines followed to a given objective. Different approaches to sterilization through chemical and other methods of occluding the oviduct have been explored. It appeared that chemicals that had been found to occlude the oviduct effectively also produced unacceptable toxic reactions. A search for more suitable agents is continuing. Research on mechanical occlusion by intratubal plugs was temporarily discontinued because of difficulty in maintaining the plugs in position. A longer-term approach is adopted in the studies to identify drugs that will accelerate the transport of ova and may thus lead to their degeneration before implantation.

2.109 *Methods for the regulation of male fertility.* In view of the demand from family planning programmes for drugs for this purpose, considerable efforts have been made to find scientists with the appropriate laboratory and clinical expertise. The existence of a naturally occurring inhibitor of sperm production (inhibin) has been confirmed in WHO studies and further efforts to characterize the substance are being

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 9.81.

made. Preliminary results in clinical studies of the use of cyproterone acetate at low doses showed depression of sperm production and motility and offered sufficient promise to warrant expanding this activity.

2.110 *Methods for the regulation of sperm migration and survival in the human female.* In a pilot study, vaginal rings containing contraceptive steroids appeared to be acceptable to wives and husbands. Difficulties with retention of intracervical devices in multiparous women were overcome by changes in design. It is unlikely, however, that these devices will prove effective by their physical properties alone; they will probably have to be medicated. Such medicated devices have been shown to be effective and further studies will determine which steroids are suitable and at what doses they can be used without inhibiting ovulation. The possible use of this delivery system for spermicidal agents is under consideration.

2.111 *Methods for the regulation of implantation.* WHO contributed to the assessment of a new hormone-containing IUD by comparing it with other IUDs in clinical trials, and by carrying out special studies on its effects on menstrual bleeding. As this device has only a one-year life-span, studies have been made of IUDs medicated with longer-acting steroids. Promising preliminary results were obtained with an IUD containing chloroquine.

2.112 Considerable attention was given to the side-effects, pain and bleeding that are the major reasons for discontinuing the use of IUDs. The physiological processes underlying bleeding are being investigated, and studies are being made of potential approaches to therapy (e.g., the use of antifibrinolytic drugs). Studies are starting on IUDs for postabortion insertion and for use immediately after delivery.

2.113 *Prostaglandins for the regulation of fertility.* Trials were continued of different doses and routes of administration of natural prostaglandins and prostaglandin analogues for the safe termination of pregnancy. The results of several of these trials are promising and it may be expected that a single intra-amniotic injection of a prostaglandin or its analogue may fairly soon become available for second trimester termination that may prove safer than the current method using hypertonic saline. Other trials are demonstrating the advantage of prostaglandins for cervical dilatation over mechanical means for terminations carried out by suction curettage at the end of the first trimester of pregnancy. Another activity is concerned with the screening of prostaglandin analogues likely to act specifically on the reproductive system, thus reducing the incidence of side-effects,

and with studies of their pharmacokinetics. Work has started on the contraceptive use of prostaglandins and new analogues of them.

2.114 *Immunological methods for the regulation of fertility.* Research has progressed well along different lines in this admittedly long-term effort to develop contraceptive vaccines for men and women. It takes the form of multidisciplinary, multi-institutional efforts mainly directed at producing immunological interference with physiological substances such as the placental hormones required for the maintenance of early pregnancy, the proteins of the trophoblast, and the enzymes necessary for sperm transport and fertilization. A WHO-supported symposium on immunological approaches to fertility control held in Geneva in July brought together 60 prominent immunologists and workers in reproductive biology. Distribution of the proceedings¹ to some 10 000 scientists should further stimulate interest in this area of research.

2.115 *Injectable contraceptives.* Clinical trials were undertaken on the effectiveness, safety and acceptability of norethisterone oenanthate in different populations of women. Complementary metabolic and endocrine studies are also under way, as are studies of the mechanism of action of this new injectable contraceptive. In an attempt to prolong the duration of action of steroids for injection, oligomers of a steroid were synthesized, but animal studies showed that the dimer had no advantage over the parent compound. Even after continued negotiations with drug firms, few suitable compounds have become available for further study in this connexion and a limited WHO programme may therefore be initiated to synthesize and screen long-acting systemic agents. During the year, research on chemical delivery systems for injectable steroids made sufficient progress to suggest that clinical studies of them could begin within about two years.

2.116 *Acceptability of fertility-regulating methods.* Efforts were made to find social scientists from developing countries to participate in three major research projects on the acceptability of methods of fertility regulation in males, on patterns and perceptions of menstrual bleeding related to contraception, and on indigenous fertility-regulating methods. These collaborative cross-cultural projects are intended to provide guidance to biomedical scientists on potential new methods and to administrators on the service implications of the new methods. The work in this field is being extended to include research on the programme implications of methods of fertility control. This is

¹ Diczfalussy, E., ed. (1974) *Immunological approaches to fertility control*, Stockholm, Karolinska Institute.

an area where research on acceptability merges with operations research, and where matters ranging from the packaging of products to the training of auxiliary personnel in relation to specific methods are examined. The work is subject to two major difficulties: the lack of good methodological instruments for the different kinds of studies involved, and the lack of trained research manpower. A group of specialists has been brought together to develop new instruments for research on acceptability.

2.117 *Other task forces.* Despite the high priority given to research on simple methods to predict and detect ovulation, little advance has been made and few practical ideas have emerged. Several consultations have been held that may lead to the initiation of research on antifertility drugs from plants, hormone-receptor blocking agents, nasal sprays for contraceptive steroids, and pharmacological models for toxicity testing of fertility-regulating agents.

Clinical research centres

2.118 In 1974, three centres, in Canada, the Republic of Korea, and the United Kingdom, were added to the network of clinical research centres. The clinical departments of the four WHO research and training centres¹ participated actively in many of the trials of fertility-regulating methods and thus constituted a further extension of the network which now covers 23 countries.

2.119 The number of clinical trials related to task force research undertaken by the clinical research centres was much greater than in 1973. In addition, multicentre comparative studies are in progress to ascertain the suitability for use in developing countries of several currently marketed contraceptives that have been tested principally in developed countries. The data from both types of studies are being analysed in a centralized data processing facility in WHO.

Research and training centres

2.120 During the year the activity of the four research and training centres has taken various forms: direct participation in the work of task forces at both clinical and laboratory levels; independent work on fertility-regulating methods that call for an extensive multidisciplinary effort; development of special laboratory methods required by the programme; investigation of new animal models; and exploratory research at "frontier" areas. The centres continue to be active in research training.

Termination of pregnancy

2.121 In countries where termination of pregnancy has been legalized, many questions are being raised concerning the relative merits of various techniques for termination of pregnancy at different stages, the staff and facilities required for different methods, the dangers, if any, of repeated abortion, and the inter-relationships between the provision of facilities for abortion and the use of contraceptive methods.

2.122 Techniques for the termination of pregnancy are being assessed in multicentre studies in relation to immediate complications and long-term sequelae. For example, a study is being carried out in Singapore and Yugoslavia of the rate of occurrence and the nature of short-term complications (up to 28 days) when termination is performed by vacuum aspiration under general as compared with local anaesthesia and as an outpatient as against an inpatient procedure. Termination by this method was shown to be as safe using local anaesthesia in an outpatient setting as when performed under general anaesthesia in an inpatient setting, and local policy in Singapore has consequently been altered to adopt the first-mentioned method. Investigation of the long-term sequelae from legally induced abortion was started in six countries in 1974 to determine whether there is an increased risk of subsequent infertility, premature delivery, or fetal wastage. The question has also been raised whether sterilization could or should be carried out at the same time as abortion, or whether it should be delayed for some time. This is being investigated in a current WHO project.

2.123 The demands made on the health services for facilities for termination of pregnancy have raised various operational questions. A meeting, sponsored by WHO and the Government of Finland in Turku in September, brought together participants from 17 countries in all the WHO Regions. They reviewed national experience and possible research needs concerning the social and psychological characteristics of women that influence their decision to resort to abortion; alternative ways of organizing referral and care during termination of pregnancy, including the attitudes and potential functions of different types of health service personnel and their interactions with the users; various approaches to counselling on other birth control methods and the application of such methods in the specific circumstances that follow an abortion.

Service research

2.124 At the family planning programme level, the successful introduction of any method of fertility

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 9.89.

regulation into the system of health care is likely to require a number of procedural and structural changes in the programme. This will certainly be true for an entirely new method such as a contraceptive pill for men. Changes will also be needed when existing methods are introduced into settings where they have not previously been used.

2.125 The development of operational research in family planning has met with considerable obstacles: conceptual difficulties in formulating research design, lack of the basic demographic data required, shortage in both developed and developing countries of the multidisciplinary expertise and manpower required, and difficulty in applying in other contexts the results of research in any one setting. Nevertheless, it has been possible to set up some operational research studies, such as those described above on the service implications of termination of pregnancy and of sterilization. In another WHO study, in a rural area of Thailand, where family planning is something quite new, an investigation is under way into factors affecting the selection of a particular method, success in its use, and the reasons for discontinuation of the chosen method: consumers are fully informed about several different methods and are free to choose among them, and the response to this free choice between the "pill", an IUD or an injectable contraceptive is being studied. Preliminary data indicate that 75% of the women have chosen the injectable contraceptive. Continuation rates are now being studied.

2.126 In an urban area, a service investigation focuses on the effects on continuation rates of home-visiting soon after the start of "pill" or IUD use and on the incidence of side-effects: the service settings include four clinics and one large hospital centre.

*Developing resources for research*¹

2.127 In response to requests from Member States, research resources are being developed as one component of WHO-assisted projects within national family planning programmes in Egypt, Iran, Pakistan and Turkey. WHO assistance has included scientific and technical advice, the provision of supplies and equipment, the payment of salaries, and the award of research training grants. In these countries, the establishment of radioimmunoassay facilities has made it possible for the first time to evaluate the endocrinological effects of hormonal contraceptives. This research is of immediate relevance to the national family planning programmes.

2.128 A WHO-staffed field research team in Bangkok is working with the Thai Ministry of Health in more than 20 clinical and field studies of contraceptives and family planning services, and is also providing research training on a national and regional basis. In India, WHO is collaborating with the Indian Council of Medical Research (ICMR) in trials of fertility control methods prior to their introduction in the national family planning programme, and is assisting several institutions in the network of testing units as well as the ICMR coordinating unit in Delhi. Two of the ICMR testing units also belong to the WHO network of clinical research centres. Like the other clinical research centres, these are already established institutions experienced in research on fertility regulation; WHO support enables them to extend their activities for international studies and to strengthen their role at the national level. The same purpose of strengthening national competence not only in clinical research, but in other research disciplines as well, is served by WHO assistance to the research and training centres mentioned in paragraph 2.120 above.

2.129 In the assistance it gives to developing research resources, WHO emphasizes training in research on fertility regulation and particularly in areas where manpower shortage is a factor seriously limiting progress, such as clinical pharmacology, epidemiology and sociocultural research on family planning. As in previous years, a number of research training grants were made and several scientists who had completed their training abroad were awarded small "re-entry" grants to enable them to set up research projects on their return to their home institutions. For research workers in selected priority areas, it has been possible to enlarge certain services such as the provision of small pieces of equipment, spare parts and reagents, and air-mail subscriptions to bibliographic and scientific journals. A seminar on recent advances in research on reproductive endocrinology which was organized in December in Bangkok was attended by 34 participants from seven countries. Also in December a scientific group met in Geneva to consider recent developments in specific areas of research on fertility regulation, such as low-dose oestrogen combination pills and the effect of contraceptive steroids on vitamin metabolism and the return of fertility. A research training workshop on contraceptive assessment and development was organized in Mexico in September in conjunction with the International Congress on Hormonal Steroids, and a pilot manpower development programme for research on acceptability in family planning has been set up.

¹ Kessler, A. & Standley, C. C. (1974) *Nature (Lond.)*, **251**, 577-579.

3. HEALTH MANPOWER DEVELOPMENT¹

3.1 Despite the sustained efforts of WHO and individual governments, in most countries today the coverage of the health services is still inadequate. This is largely because of the geographical and occupational maldistribution of health personnel, which in turn is generally associated with an absence of a social or health policy or with a lack of realism of an existing policy. This lack of realism is often responsible for the failure of a health manpower system to develop in an integrated and balanced way. In cases of such uncoordinated development of health manpower, each of the four main elements of the development process—planning, production, utilization, and monitoring—in so far as each exists, evolves independently of the others, and with a clear imbalance in favour of the conventional health occupations, which grow more in response to the interests of the professions and of the urban elite than to the actual community needs.

3.2 The lessons of the past decade indicate that a health manpower study does not necessarily culminate in a plan; a permanent process for health manpower planning does not flow as a matter of course from the formulation of a plan; plans and processes that do not take into account the socioeconomic conditions of a country and do not fit into its political framework tend to be incomplete, theoretical, futile, and a source of frustration; plans, when they exist, do not necessarily influence the production of manpower; and monitoring has hardly anywhere been provided for.

3.3 Thus, a double integration seems to be required. First, an integration of the different elements of health manpower development: planning should define the quality and quantity of production, and monitoring, by disclosing the quality and fitness of the “product”, should influence both planning and production. Second, an integration of manpower development with health services development into a single programme of *health services and manpower development* (HSMD) as an integral part of country health programming or of any other comprehensive health

planning within the framework of socioeconomic planning. Health manpower development has no meaning outside the context of health services development. Where the majority of a population is not provided with basic health services, the solution of the problem should be sought through the integrated development of services and manpower, always taking local conditions and circumstances into account.

3.4 The possibility is being explored of testing this concept in one or two countries of each WHO Region by developing a permanent coordinating and catalytic mechanism to achieve the double integration required. As a first step, negotiations were initiated for its application in Iran (see also paragraph 1.4).

Health manpower planning

3.5 The protocol for the proposed WHO multinational study of the international migration of physicians and nurses was submitted in March to a group of experts, who discussed the technical aspects. Later a meeting was held of potential cosponsors, who reviewed the project and the strategy for its implementation, and pledged support for the first phase in the form of financial contributions or of assistance in collecting data and promoting further interest. The first phase of the project is supported financially by WHO jointly with the Federal Ministry for Youth, Family Affairs and Health of the Federal Republic of Germany, the United States Health Resources Administration, and the International Task Force on World Health Manpower. Operations in the first phase, consisting of the collection of readily available information, began at the end of the year. In the second phase information will be obtained from institutions providing health services and medical and nursing education, while in the third phase, information will be gathered directly from physicians and nurses. In conjunction with the United States Health Resources Administration, WHO has prepared an annotated bibliography on the subject of the international migration of health workers.

3.6 The Ten-year Health Plan for the Americas includes specific recommendations that health manpower planning should be an integral component of overall health planning. In accordance with the

¹ The examples of WHO activities in the development of health manpower given below are arranged as far as possible in accordance with the level of training provided; some overlapping, however, is inevitable between the activities described under the different subheadings.

recommendation made by the Pan American Conference on Health Manpower Planning in 1973, assistance was given to countries in creating or strengthening health manpower planning units within ministries of health. The Organization helped Brazil, Mexico and Paraguay in establishing a health manpower planning mechanism which included information gathering and retrieval, and the standardization and coordination of the health manpower development process. Assistance was also given in the planning, production and utilization of health manpower for special programmes to expand health services for the rural population. A mathematical model by which future manpower requirements in the Region of the Americas can be estimated was designed and is being tested in a Latin American country. The Organization assisted in initiating research projects on factors involved in the distribution of physicians in Mexico and of nursing manpower in Colombia and Guatemala, and assisted a regional study on manpower for rural health.

3.7 The WHO-assisted health manpower study in Sri Lanka, which was completed in 1973,¹ was followed up by a series of recommendations which, when carried out, will improve the health manpower planning capabilities of the country. The reports of the different substudies have been consolidated with a view to publication. Bangladesh, Indonesia and some other countries of the South-East Asia Region have decided to simplify the nursing personnel system by reducing the number of categories of workers in nursing and midwifery.

3.8 Further to the study on manpower requirements for environmental health services initiated in 1973 in the European Region, pilot surveys were completed in the Federal Republic of Germany, Poland, Sweden and the United Kingdom. They have provided useful information regarding the needs in these countries, and the survey results will facilitate the planning and implementation of training programmes in environmental health.

Production of health manpower

3.9 In its assistance to Member States in the production of health manpower, the Organization has emphasized the need for training to be organized in close relationship with the health services, with the HSMD concept (referred to above) in mind. An example of effective coordination in this respect comes from the Eastern Mediterranean Region, where the re-examination of basic health services projects with

an extensive training element resulted in rationalization through project merging and in steps to ensure effective liaison between those in charge of health services development and those responsible for health manpower development.

3.10 As in previous years, numerous training institutions in all countries received WHO assistance through either the provision of teaching staff (see Table 1) or advice on the establishment of new schools for health manpower training.

3.11 It is not feasible to list all the training courses, seminars and workshops organized or cosponsored by the Organization in 1974. Only a few are therefore mentioned in the text, but a representative sample of activities is to be found in Table 2 at the end of the chapter.

Educational planning

3.12 It is now more widely accepted that an explicit definition of educational objectives, based on assessed community health needs and demands, is an indispensable preliminary to the planning of any teaching programme. This represents an important change in current academic habits and is inevitably a slow process. It becomes possible only when the responsible members of the teaching staff can be induced to bring their competence in the educational field up to date and to make use of a systematic approach in planning and implementing their teaching activities.

3.13 In Africa assistance was given to Nigeria in initiating research on the role and functions of nurses in community health. Assistance in educational planning for nursing was given to 11 countries in the Region of the Americas, where a workshop was also held on educational planning in nursing programmes (see also Table 2).

3.14 *Educational technology.* The Organization's programme in educational technology has three main goals: the design, testing and dissemination of teaching/learning materials, the evaluation of educational methods, materials and related information services, and the development of communication techniques. During the year, activities were directed particularly to the problems faced by developing countries in the production of effective health manpower.

3.15 In the Eastern Mediterranean Region efforts were made to find a practical solution to the problem of large student numbers which is becoming increasingly serious in many countries. The University of Cairo medical school is trying, with WHO as-

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 10.5.

Table 1. *Assignments of teaching staff, 1974*

1. For training professional personnel * (by subject)

	Teachers	Months
Educational planning and practice	6	40
Basic medical sciences	33	296
Paediatrics, maternal and child health	11	92
Clinical and related fields	31	292
Public health and preventive medicine (including hospital administration and statistics)	34	261
Dental education	4	38
Nursing	82	751
Environmental health	8	81
	209	1 851
For training auxiliary personnel	55	579
Total	264	2 430

2. Countries or areas to which assigned

Afghanistan	8	Colombia	1
Algeria	14	Congo	2
Bangladesh	3	Dahomey	2
Botswana	2	Democratic Yemen	11
Burma	12	Egypt	5
Central African Republic	2	Ethiopia	3
Chad	2	Fiji	1

* Some instructors were engaged in the training of both professional and auxiliary personnel.

2. Countries of areas to which assigned (continued)

Gabon	1	Pakistan	2
Ghana	1	Papua New Guinea	2
Guatemala	1	Peru	1
Guinea	1	Philippines	1
India	7	Qatar	2
Indonesia	3	Republic of Korea	1
Iran	9	Republic of Viet-Nam	7
Iraq	11	Rwanda	1
Israel	3	Saudi Arabia	1
Italy	1	Senegal	2
Jamaica	3	Sierra Leone	1
Jordan	4	Singapore	2
Kenya	7	Somalia	8
Khmer Republic	1	Sri Lanka	4
Kuwait	1	Sudan	5
Laos	13	Syrian Arab Republic	1
Lebanon	2	Thailand	4
Libyan Arab Republic	6	Tunisia	4
Malawi	1	United Republic of Cameroon	5
Malaysia	4	United Republic of Tanzania	7
Maldives	2	Upper Volta	1
Mali	2	Venezuela	1
Mauritania	1	Yemen	13
Mauritius	3	Zaire	12
Mexico	1	Zambia	4
Mongolia	3		
Morocco	1		
Nepal	2		
Niger	4		
Nigeria	5		
		Total	264

sistance, to deal with it by revising its curricula and schedules, and by improving teacher capacity through vocational training and the controlled use of audio-visual media and learner capacity through the provision of objectives and self-instructional systems. Another project aims at exploring methods of communication that can ensure regular contact with health auxiliaries in rural areas and thus enable them to obtain guidance and continuing education, neither of which they usually receive at present. A feasibility study for this project was carried out in Sudan in November and December with the active participation of representatives from UNESCO and ITU.

3.16 The Organization is coordinating the activities of the two Latin American Centres of Educational Technology for Health, established in Rio de Janeiro and Mexico City, in 1972 and 1973 respectively, so that they may make the most effective contribution possible to improvements in curriculum design and the production of educational materials for health science teaching. In 1974 the centres were concerned not only with medical undergraduate education but increasingly also with education for dentistry and

veterinary medicine. The Mexico City centre concentrated on the production and adaptation of materials and packages for the teaching of dentistry and the continuing education of dentists.

3.17 The Centre for Educational Technology in the Health Sciences in Cairo began operation early in the year in a building modified to meet the centre's needs. Local staff was trained both on site and through the fellowships programme. In the early stages, priority is being given to the design, testing and production of teaching/learning materials for the basic training and continuing education of nurses which is an urgent local need. The materials produced in Arabic could have a considerable value for education in the health sciences in all Arabic-speaking countries. Teachers are being trained to utilize the methods and materials developed by the centre.

3.18 In 14 nursing education projects in the African Region, emphasis was given to the development of teaching methods and materials.

3.19 WHO assistance to a number of institutes has contributed to the production of high-quality teaching/

learning materials, especially for individual study. The "Integrated Pathology Audiovisual Learning System", a multimedia pathology course prepared by the medical faculty at Rotterdam, Netherlands, with support from WHO, was placed on trial in medical schools in Ghana (Accra), Hong Kong, Mexico (Mexico City), Brazil (Rio de Janeiro), Iran (Shiraz), and Singapore. The Royal Tropical Institute in Amsterdam has produced an audiovisual "package" known as "Translation of Medical Knowledge into Rural Practice" for the training of medical auxiliaries in East Africa and for their use as in-service reference material. WHO assisted by providing simple visual media, reviewing the accompanying learning material and advising on the protocol for the field trial of this "package". The subjects include the diagnosis and treatment of leprosy, common skin and eye complaints and malnutrition. With WHO support, the University of Edinburgh, United Kingdom, is working on a project to design and produce a series of short videotapes on diagnostic situations in psychiatry, to help standardize the clinical approach and to establish common diagnostic criteria. A series of films on gynaecological interviewing and examination,¹ prepared with WHO assistance by the medical faculty in Newcastle-upon-Tyne, United Kingdom, was awarded the gold medal in a recent international medical film competition. These films are currently being tested at medical schools in Egypt and Iran.

3.20 The design and production of teaching/learning materials for training auxiliary health personnel continued to increase during the year. Some 1000 copies of the WHO manual on basic techniques for the medical laboratory, in French, and a large number of teaching "packages" (slides, filmstrips, overhead-projector transparencies and field-tested multichoice questions) have been sent to schools and subject specialists for trial and evaluation.²

3.21 In the Region of the Americas, the programme of distribution and sale at low price of medical textbooks and basic diagnostic equipment reached 148 schools of medicine, covering 21 disciplines. In 1974 a selection was made of textbooks on preventive medicine and social sciences, biochemistry, physiology and pharmacology. In the field of nursing, texts are being distributed in 197 schools in 19 countries; a selection was made of textbooks on mental health nursing and psychiatric nursing in 1974. A total of 25 schools in 10 countries of this Region are at present participating in the programme of basic clinical and

diagnostic equipment. To date, 57 units of filmstrips have been produced covering epidemiology, communicable diseases, laboratory techniques, administration, veterinary medicine and sanitary engineering. They are distributed free of charge to public institutions in the health and education sector, or offered at low cost to private institutions.

3.22 In pursuance of resolution WHA25.26 taken by the World Health Assembly in 1972, a feasibility study is being undertaken to ascertain whether the Organization should prepare and publish medical textbooks.

3.23 Following a feasibility study and with the assistance of WHO, the collections of audiovisual material at the Royal Tropical Institute, Amsterdam, and the Prince Leopold Institute, Antwerp, Belgium, were classified and catalogued, and the mechanism for an information exchange using microfiches was established. This will form the basis of an audiovisual reference collection and exchange service as recommended by the 1974 meeting of the Council of European Schools and Institutes of Tropical Medicine and Hygiene. This reference collection and service is to be made available to institutes in developing countries where there is a serious need for materials of this type.

3.24 In cooperation with UNICEF, the Organization has carried out a two-year review of teaching and learning materials for schools of nursing and midwifery and an evaluation and revision of UNICEF teaching aids. A total of 1600 books and over 300 items of audiovisual material were reviewed, annotated and prepared for publication or distribution.

3.25 Arrangements have been made with the United States Department of Health, Education, and Welfare for a study by WHO on nonverbal communication in a health context. The aim is to demonstrate to what extent nonverbal systems such as films and cartoons can be used to convey health messages in different cultures and at different educational levels. A multidisciplinary team has carried out an initial survey of previous work in this field, and a number of examples of nonverbal communication have been selected for controlled field trials in the Eastern Mediterranean Region.

3.26 *Educational evaluation.* Educational evaluation activities have been mainly concerned with undergraduate and postgraduate medical students. In the European Region, as in other Regions, objective testing is gradually being accepted as an essential instrument of educational management. A working group convened in Copenhagen in May discussed

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 10.75.

² *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 10.74.

examinations and made proposals regarding objective examination systems and grading methods, with special reference to new methods of measuring competence in clinical medicine.

Auxiliary health personnel

3.27 The team responsible for the delivery of health care to a given sector of the population may be considered as forming a pyramid, consisting of various levels of health personnel. At the base are health workers who have had short training to enable them to deliver primary health services under the supervision of staff in the two higher levels. At the intermediate step of this pyramid there is the medical assistant (feldsher) or community health nurse who is responsible for a rural health centre where he or she looks after patients, including those referred by auxiliaries working in villages; the person at this level is also responsible for organizing and supervising the work of the village health workers and for their training and continuing education. At the apex are the physician, the specialist and other highly qualified health personnel; they are also responsible for the district hospital to which cases are referred. Health workers at this level are also responsible for the work performed at all levels of the pyramid, and for the continuing education of intermediate level health workers. Two publications were issued during the year to promote greater understanding of the role and use of the members of the team at the middle level.^{1, 2}

3.28 At two regional seminars, held in Manila and in Khartoum, the services that the *medical assistant* can render were discussed with public health administrators. Assistance was given to Algeria, Bangladesh, Burma, the Central African Republic, and Laos in connexion with the training of medical assistants; to Malaysia in connexion with the revision of the curriculum for health inspectors; and to the Republic of Viet-Nam for the development of a programme to train public health technicians. With financial assistance from UNDP, the Organization has drawn up a plan for the training of several categories of health personnel in four intercountry centres in the English-speaking Caribbean area. The continuing studies on the use of auxiliary personnel being carried out with UNFPA assistance in Brazil, Egypt and Hungary were centred in 1974 on the question of the composition of the health team, which is largely made up of

auxiliaries. The principal investigators met in Geneva in December to assess the work accomplished and to make plans for the last phase of these studies.

3.29 As mentioned in Chapter 1 (paragraph 1.16), a working document has been prepared in three languages on the training and utilization of village health workers; it deals with the problems of supervision, supply of drugs and referral of patients in the context of the health team, and relates them to the cost involved, the existing health services and the resources of the country.

3.30 WHO research and development activities concerning the delivery of health services have an important training component in Iran, where it has been recognized that further development of health services depends on using new types of health auxiliaries to extend front-line services to rural communities. The service needs of the community for the principal kinds of health and medical care were first defined and appropriate sequences of service procedures to meet them were devised. These were then used as the basis for training community health workers and village health workers.

3.31 With a view to ascertaining whether it might be practicable in certain situations to incorporate traditional healers who had been given orientation and short basic training into the general health care system, plans were made to assist countries expressing an interest in such a development.

3.32 The production of *nursing auxiliaries* has increased in the majority of countries in the Region of the Americas, and it is estimated that approximately 24 000 were prepared during 1974, or 66% of the target set in the Ten-year Health Plan for the Americas. It is expected that Chile, Colombia, Cuba, Nicaragua and Uruguay will either meet or surpass their targets. In the European Region, special consideration was given to the need for well-defined national nursing/midwifery education subsystems in keeping with equally well-defined nursing personnel subsystems. The place in these of auxiliary workers and of educational programmes for them was a matter of much concern in many countries.

3.33 In the South-East Asia Region, WHO-assisted projects emphasized the training of *multipurpose community health workers*, particularly those intended for service in rural areas. In Bangladesh, the training of personnel for the newly created post of family health visitor began in July. In the Maldives, a training programme for community health workers admitted its third group of students in October. In India assistance was provided in developing and applying

¹ *The training and utilization of feldshers in the USSR*, 1974, World Health Organization (*Public Health Papers*, No. 56).

² Pitcairn, D. M. & Flahault, D., ed. (1974) *The medical assistant: an intermediate level of health care personnel*, Geneva, World Health Organization (*Public Health Papers*, No. 60).

curricula for the training of teachers of multipurpose workers. The 104 tutors who received training were teaching over 2900 auxiliary nurse-midwives in 50 schools. In the Western Pacific Region, new types of health workers such as auxiliary nurse-midwives or community health nurses are being prepared to deliver basic health services at the extreme periphery in Laos, Peninsular Malaysia and the Philippines. In the Republic of Korea the existing single-purpose health workers were being transformed into multipurpose health workers.

3.34 Projects for the training and utilization of *traditional birth attendants* reflect the trend towards more active community participation in the delivery of health care. In many countries, increasing numbers of mothers are being referred by traditional birth attendants for professional help in abnormal pregnancies and difficult deliveries, with a consequent reduction in maternal and infant mortality and morbidity. In Egypt, Iran, Iraq, Pakistan and Sudan, the midwives needed to supervise and train traditional birth attendants are being given special training. At the American University of Beirut, the programme for the training of midwifery tutors sponsored jointly by WHO and UNICEF was continued.

3.35 Following a review of the results of a WHO-assisted study on the role of traditional birth attendants, a draft guide for the training and utilization of these attendants in maternal and child health and family planning has been issued as a working document for field testing. In collaboration with the Government of El Salvador a meeting was held in September-October, with 15 countries participating, to discuss strategies for the revision of ongoing projects in this field and the implementation of training programmes for traditional birth attendants. In collaboration with the Government of the Philippines, an interregional meeting on the same subject took place in Manila in December.

3.36 *Nutrition* education programmes were strengthened through WHO assistance in Botswana, Congo, Kenya, Liberia, Nigeria, Senegal, Sierra Leone, United Republic of Cameroon, Zaire and Zambia; this was done mainly in projects for the development of health services, and a large number of assistant health inspectors, auxiliary nurses, social workers and nursing aides in these countries received nutrition training.

3.37 As part of the series of lists of training institutions in the health sciences, a *World Directory of Schools for Animal Health Assistants* was published during the year under the auspices of FAO and WHO.

3.38 In the Western Pacific Region, direct assistance was provided for the training of *dental therapists* (operating dental auxiliaries similar to the school dental nurses first developed in New Zealand) in Fiji, the Khmer Republic, Papua New Guinea, the Republic of Korea and the Republic of Viet-Nam. The title of dental therapist allows flexibility in training and utilization according to the particular needs of countries. In the South-East Asia Region, WHO assisted in the training of dental nurses in Burma and in evaluating a similar training project in Thailand. In the African Region assistance was continued for the training of operating dental auxiliaries in Senegal and Zaire and was begun in Guinea and the United Republic of Cameroon. In the Region of the Americas a training project for dental nurses was developed in Trinidad and Tobago with UNDP assistance, and an institute was established in Ecuador for the development of auxiliary dental personnel to work in health teams in that country.

Professional health personnel

3.39 A study group on the planning of schools of medicine, convened in Geneva in September, reviewed the problems encountered in founding new medical schools and those met in existing institutions that train physicians, nurses, midwives, pharmacists, dentists, and other categories of health workers. The group suggested guidelines and made proposals of particular applicability in developing countries wishing to establish training institutions in the health sciences.

3.40 Several regional meetings of deans and teachers of medical schools and health administrators were held during the year to discuss topics of mutual interest—notably in the African, European and Western Pacific Regions.

3.41 At the University Centre for the Health Sciences, Yaoundé, a mid-term evaluation of the integrated teaching and multiprofessional training programmes for physicians and health technicians and postbasic courses for nurse-midwives was made in February. Plans were formulated for evaluations in other centres that have already experimented with such methods. These evaluations make it possible to compare the new methods with more traditional ones, to bring out the possible benefits and advantages of the former and to show whether they succeed in instilling the team spirit in the personnel trained.

3.42 In suitable situations, medical schools are being encouraged to give medical students, graduate physicians, nurses, midwives and other health workers an orientation in the indigenous system of medical

practice. In certain countries, this broadening of the training should give the health team a better understanding of sociocultural factors and thus lead to more complete coverage of the rural and urban communities.

3.43 In the Americas, assistance was given in research projects on the cost analysis of medical education in Mexico and Peru. Medical schools in Cuba, the Dominican Republic, Guatemala, Honduras, Mexico and Peru were given advice on the objectives of the integration of teaching in the health sciences with the provision of health services, and on the plans and strategies to achieve that integration. In this Region, the Organization has emphasized the importance of combining the teaching of social and preventive medicine with that of the clinical disciplines, has advised on the introduction of social sciences as part of the medical curriculum, has conducted studies on the social aspects of community medicine in five countries, and is gathering information on the social aspects of urban public health. In addition, assistance in curriculum reform was given to the schools of health sciences of Bolivia and of the Dominican Republic, and to the schools of medicine of Argentina, Costa Rica, Ecuador, Panama and Paraguay. The Organization collaborated in developing the teaching of clinical and social paediatrics in medical schools in Chile, and assisted medical schools in Ecuador in connexion with the teaching of maternal and child health.

3.44 In Bangladesh, India, Indonesia, Sri Lanka, and Thailand, the teaching of human reproduction, family planning and population dynamics in medical schools or schools for other health professionals continued to receive WHO support.

3.45 A number of new medical schools were opened in countries of the Eastern Mediterranean Region; all received some form of WHO assistance, from the supply of medical literature to the provision of teaching staff.

3.46 The evaluation of the results of earlier WHO assistance to educational programmes for *nursing and midwifery* personnel is essential as a basis for planning to meet present and future needs. A design for the evaluation of nursing education programmes was developed and is being used in connexion with postgraduate programmes in Latin America and WHO-assisted postbasic and basic university programmes in India.

3.47 In the African Region, efforts were made to develop resources for the training of national nursing personnel. WHO assistance was provided to 14 nursing training projects, all of which emphasized the adaptation of the education programmes and their content to local and community needs.

3.48 To help in overcoming the acute shortage of nurses in the Region of the Americas, it is now planned to introduce nursing education into secondary schools. A guide for developing such programmes was produced by the Organization and widely distributed. Several countries have initiated nursing training programmes in their general education systems with a view to preparing a new category of intermediate-level nursing personnel in addition to the auxiliary and professional levels. Assistance was provided to Bolivia, Colombia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Honduras, Mexico, Nicaragua, Panama and Venezuela in planning nursing education, establishing intermediate-level training programmes, designing and developing flexible curricula, or extending basic curricula to include the training of nurses in maternal health, paediatrics and other areas.

3.49 In the European Region, assistance was provided to the new undergraduate degree programme in nursing at the University of Iceland. In Greece, WHO provided assistance for the health component of an UNDP-assisted project for the development of five centres for higher technical education for which UNESCO is the executing agency; a master plan for the nursing curriculum was drawn up, and technical advisory assistance was provided to the five centres, which have established programmes for nurses, midwives and medicosocial workers.

3.50 In the Western Pacific Region, assistance was given to basic professional nursing education programmes in the Cook Islands, Fiji, the Khmer Republic, Laos, New Hebrides, Niue, the Philippines, Tonga, and Western Samoa. The report of the technical advisory committee on nursing for the Western Pacific, held in Manila in December 1973, which was issued during the year, contains guidelines for the provision and strengthening of nursing and midwifery services in national health programmes.

3.51 While considerable progress has been achieved in all Regions in *nutrition* training at the postgraduate level, its impact is limited and more attention is needed in the wider area of undergraduate training, especially for the health workers who actually undertake nutrition activities in the field. In the Americas, a review of curricula for nutritionists and dieticians was made by the Special Studies Commission established by the Second Conference of Schools of Nutrition and Dietetics. In Afghanistan, nutrition training for all categories of health personnel was given at the Institute of Public Health, Kabul, thus promoting the integration of nutrition work with the routine health services.

3.52 Efforts to strengthen *health education* services have led to new or expanded programmes for the training of health education specialists. WHO convened a symposium in November in Cologne, Federal Republic of Germany, in connexion with the preparation of health personnel in health education, with special reference to postgraduate programmes. Indonesia received assistance in establishing health education curricula for health workers. Assistance was also provided to India and the Republic of Viet-Nam in connexion with training in health education.

3.53 Following the closure in 1973 of the International Malaria Eradication Training Centre in Manila, countries in the South-East Asia Region have intensified their own training activities with assistance from WHO to meet the requirements of *malaria* control and eradication. Regular training is being carried out for professional health personnel in Bangladesh, Burma, India, Indonesia, Sri Lanka and Thailand.

3.54 Assistance was provided in developing a degree course for *dentists* in Uganda.

3.55 The training of *laboratory technicians* received assistance in Burma, Egypt, Ethiopia, India, Mongolia, Nepal, Papua New Guinea, Sri Lanka, Sudan, Thailand and Tunisia. WHO also gave support to the medical school and laboratory technician training centre in Fiji where future laboratory technicians of the South Pacific Islands can be trained in an environment similar to their own.

3.56 A survey of the curricula of *pharmacy schools* in the Eastern Mediterranean Region was initiated, and universities in Benghazi and Tripoli (Libyan Arab Republic), Tunis, and Shiraz (Iran) were assisted in developing modern teaching programmes in pharmacy and pharmacology.

3.57 In pursuance of resolution WHA26.59 taken by the World Health Assembly in 1973 on the development of manpower in *environmental health*, the Organization is formulating a comprehensive programme of assistance to enable Member States to man their environmental services. As a first step, the objectives of existing WHO-assisted projects were reviewed and brought into line with the goals of the comprehensive programme. A round-table conference on education in sanitary engineering with over 100 participants was organized in Mexico City in August during the XIV Inter-American Congress on Sanitary Engineering. The schools of engineering of the Universities of Costa Rica and of São Carlos (Brazil) received assistance from the Organization in improving the teaching of sanitary engineering.

3.58 The institutes of technology in Bandung, Indonesia, and in Rangoon were assisted in planning the future development of their sanitary engineering training programmes. Advice was given to Sri Lanka and Thailand in developing curricula in industrial wastes treatment.

3.59 WHO continued in its role as coordinator and administrator of the assistance which the Government of Switzerland gives to the Regional School of Sanitary Engineering, University of San Carlos, Guatemala, and to the Sanitary Engineering Centre in Rabat. The latter centre received WHO aid in strengthening its training programme through the organization of an interregional workshop on educational planning in environmental health, and through a research project to assess existing training facilities and to study the planning, implementation and evaluation of improvements in training activities, teaching methods and teaching aids. The long-term aim of this project is to create a model for educational planning and methodology in environmental health. The Organization also continued its aid in strengthening sanitary engineering courses at the engineering faculties of Pahlavi University, Shiraz, Iran, and the University of Engineering and Technology, Lahore, Pakistan.

Special training programmes

3.60 Special training programmes include postbasic training, specialization and continuing education; public health training; and teacher-training for schools for health personnel.

3.61 *Postbasic training, specialization, and continuing education.* Assistance in *postbasic nursing education* was given for the preparation of nursing and midwifery personnel for teaching and administration in the African Region at centres in Kenya, Nigeria, Senegal and the United Republic of Cameroon. Since 1965, 332 nurses from 14 French-speaking and five English-speaking African countries have received diplomas in these centres. In Latin America, an evaluation of postgraduate nursing programmes was undertaken. WHO-assisted postbasic programmes in Bangladesh and India continued to show progress. In the European Region, Member States are reappraising their programmes for postbasic and postgraduate nursing education. There is a shortage of European schools offering specialization at these levels, and existing schools tend to concentrate on pedagogy and administration, rather than on nursing itself. Several countries of this Region obtained WHO assistance in preparing teachers capable of developing more effective programmes of nursing education beyond the basic

level. In the Western Pacific Region, WHO assistance for the development of postbasic nursing and midwifery programmes on an intercountry basis was begun by visits to the British Solomon Islands Protectorate, Guam, Malaysia, Singapore, and the Trust Territory of the Pacific Islands. In Papua New Guinea, WHO continued its assistance in developing postbasic nursing education programmes, and the first group of student nurse-teachers obtained their qualifications. At the University Hospital, Kuala Lumpur, where a postbasic nursing and midwifery education programme is assisted by the Organization, a new programme for the preparation of teachers in midwifery was introduced during the year. In the Republic of Korea, WHO continued to assist the School of Public Health, Seoul National University, which offers a public health nursing programme leading to a Master of Public Health degree and certificate.

3.62 The training of *clinical specialists* and research workers received special WHO assistance in the African Region, and several Latin American countries that lack training facilities for such specialists were aided in organizing their curricula or in the provision of teaching staff.

3.63 A capacity study on *graduate medical education* in Europe, begun in 1971, was completed in 1974. It involved the collection of information on categories, methods of training, and numbers of specialties and subspecialties in the countries of the European Region, and will enable Member States to compare training practices and requirements of training, to establish possible equivalence procedures as between countries in the light of their own specialist training patterns, and to use the data provided as a basis for health manpower planning.

3.64 WHO support was given in connexion with courses, seminars and workshops (see Table 2) for *continuing education* in a variety of fields. During 1974 the Organization collaborated with the Governments of Chile, Colombia, Ecuador, Guatemala and Mexico in developing continuing education courses in internal medicine, maternal and child care, and surgery. A joint project has been planned with UNICEF for the development in Costa Rica and Panama of a system of continuing education in clinical and social paediatrics for general physicians and nurses. In the Eastern Mediterranean Region, where there is very little continuing education in medicine, WHO helped to assess the situation in Iran, Iraq and Lebanon and to collect data for a meeting on postgraduate and continuing education in medicine scheduled for 1975.

Assessments are also to be made in other countries of that Region.

3.65 In Thailand, continuing education for chief nurses was maintained, and in Nepal short courses and group educational activities emphasized teaching and supervision. The College of Nursing, Delhi, was assisted with a programme in continuing education in nursing. Algeria, Morocco and Turkey received assistance in the continuing education of nurses and midwives in family health. In the region of Lombardy, Italy, the Organization helped to launch intensive courses in the management of nursing services and nursing education, and a funds-in-trust programme in postbasic and continuing education for nurses.

3.66 In view of the importance now being given to *sex education*, WHO has been called upon to advise on teaching programmes on that subject. As the social situation differs from one country to another, the educational process in this field will necessarily have to remain flexible and to be adapted to the needs of each community. Nevertheless, some general suggestions, based on contributions by a number of specialists, are contained in a WHO publication¹ intended to help equip physicians, nurses, midwives and other health professionals with the knowledge and skills required for counselling in human sexuality, sexual behaviour and family planning.

3.67 During the year, WHO again assisted in training doctors and veterinarians in *epidemiological surveillance* and control of communicable diseases. Educational objectives were redefined in the three annual short-term training courses in the English language in Prague and New Delhi and in Moscow and Alexandria (Egypt), and in the French language in Paris and Bobo-Dioulasso (Upper Volta). In these courses, a more practical type of field training has been introduced, and WHO has promoted the use and design of new sets of pretraining and post-training multiple-choice questions to help trainees and instructors to evaluate the results of their joint work.

3.68 The last of the series of annual international courses in English on the epidemiology and control of *tuberculosis* was held in 1974 at the Postgraduate Medical and Pharmaceutical Institute, Prague. In the absence of candidates, the course in Rome for French-speaking physicians was not held. From the outset WHO has seconded some staff and provided the

¹ Mace, D. R. et al., ed. (1974) *The teaching of human sexuality in schools for health professionals*, Geneva, World Health Organization (Public Health Papers, No. 57).

services of international experts to lecture at these courses. During the 13 years that this activity has existed, 174 tuberculosis workers in key positions have received training in English, and 118 in French.

3.69 WHO has undertaken a joint project with the European Society of Cardiology on the analysis of postgraduate training in *cardiology* in the European Region. The purpose is to define principles for drawing up training programmes for cardiologists. The WHO/DANIDA advanced training courses in the diagnosis, treatment and prevention of major cardiovascular diseases, which have now been conducted for six years, were the object of an evaluation made by DANIDA which showed that they had had an impact on the development of cardiological services in the developing countries from which the trainees came.

3.70 In the field of *mental health*, the eight centres collaborating in the international pilot study of schizophrenia developed a training programme in social psychiatry and psychiatric epidemiology for candidates from developing countries. The programme is designed to allow them to receive this training in their own countries, and with the minimum amount of time spent abroad. In the Eastern Mediterranean Region, WHO assisted in a training programme in mental health for general-duty physicians in Iran.

3.71 A working group was convened in Brussels in May to evaluate the courses in *epidemiology and medical statistics* sponsored by WHO since 1963. It concluded that they had contributed largely to the dissemination of epidemiological knowledge and statistical methods and concepts among the Member States in the European Region. The group emphasized the need for postgraduate training in the organization of health statistical services and in the application of statistics and epidemiology to the planning and evaluation of health services and to operational research methods. Since 1970, WHO has organized an intensive interregional programme for the training of national health statisticians and health administrators holding key positions in basic methods of collecting, processing, disseminating and using statistics on family health and family planning. In addition, educational materials, including a curriculum for training in methods of family planning statistics, have been developed.

3.72 *Public health training.* WHO assistance was provided to Mexico for schools of public health that were planning courses in health administration, and to Peru in developing intercountry courses for middle management health personnel at the School of Public

Health of Lima. The School of Public Health in Mexico City and the School of Public Health in São Paulo, Brazil, were assisted in reviewing the health education content of the curricula for various courses. At the VIII Conference of Schools of Public Health in Latin America, in Lima in February,¹ the subjects discussed included the evaluation of schools of public health and the main stages of manpower development in public health. A study group on the teaching of mental health in schools of public health met in Caracas in December. Assistance continued to the course for public health administrators at the Central Institute for Advanced Medical Studies, in Moscow, through the provision of lecturers and the award of fellowships. The third scientific session of these courses took place in Warsaw in May, and was attended by former trainees of the courses. Over the past 10 years this training programme, offering courses in both Russian and English, has assisted more than a dozen countries in various Regions by producing a large number of well-trained public health organizers, many of whom now hold high positions in their health administrations. Assistance was given to the School of Public Health, University of Teheran, in preparing a job-oriented course in tropical public health leading to a Master's degree. The course, which is open to medical graduates from other countries, is part of a programme to stimulate postgraduate training in the epidemiology and control of malaria and other parasitic diseases.

3.73 The Organization provided assistance to the University of Singapore in developing the first course leading to a degree of Master of Science in Occupational Health and also in connexion with the Master of Public Health course. The University of Malaya, Kuala Lumpur, and the Institute of Public Health in the Philippines were assisted in connexion with programmes for Master of Public Health courses.

3.74 *Teacher-training.* The Organization's world-wide, long-term, teacher-training programme was further developed during the year. Regional teacher-training centres have now been set up in each of the five Regions where the need was felt. Leaders and teachers for them were trained over the last four years at the WHO interregional teacher-training centre at the Center for Educational Development, University of Illinois College of Medicine, Chicago, USA. Having fulfilled its purpose, the Center for Educational Development has now ceased its activity as a WHO interregional teacher-training centre. During those four

¹ The report of this conference and a number of the papers presented have been published in: *Educ. méd. Salud.*, 1974, 8, No. 3.

years, it has prepared 13 persons for a Master's degree in education and has provided intensive four-week training courses for 58 WHO fellows. It has also provided staff for two-week workshops to prepare the ground for regional teacher-training centres in Bangkok, Kampala, Shiraz (Iran) and Sydney (Australia). At the regional teacher-training centre in Kampala, the first of a series of intercountry workshops was held in March. Its aim was to help train teachers of the health sciences from African countries in educational planning and implementation. The two Latin American Centres of Educational Technology for Health (see paragraph 3.16) provided several courses on pedagogy and didactics, as well as courses on the different stages involved in clinical reasoning. Two regional teacher-training centres in the South-East Asia Region—one in Bangkok and the other in Peradeniya, Sri Lanka—came into full operation during the year. National teacher-training centres are being developed in Burma, India, Indonesia and Mongolia.

3.75 In the Eastern Mediterranean Region in 1974 about 100 medical faculty teachers received for the first time short intensive courses in educational methodology at the regional teacher-training centre at Pahlavi University, Shiraz, Iran. An important innovation at this centre was the institution of a series of short-term "internships", whereby interested teachers may spend a period of intensive study in subjects such as instructional strategies, selection and organization of educational experiences, audiovisual techniques, and evaluation. Steps towards the creation of national teacher-training centres were taken in Egypt at the Faculty of Medicine, University of Alexandria, and the Ain Shams University, Cairo, and in Sudan at the University of Khartoum.

3.76 The regional teacher-training centre for the Western Pacific in Sydney, Australia, organized three multidisciplinary workshops, each focusing on a specific aspect of the teaching/learning process.

3.77 Between 1971 and 1974, 20 Australian teachers received training in the interregional teacher-training centre in Chicago; at the Sydney centre they have, in turn, provided training for 119 teachers of various health disciplines from 13 countries or territories of the Region. Some 640 teachers attended national seminars organized by the regional centre, with a view to promoting the establishment of national teacher-training centres in Australia, Japan, Laos, Malaysia, New Zealand, the Republic of Korea, and the Republic of Viet-Nam.

3.78 An attempt was made in the European Region and elsewhere to interest medical schools in providing facilities for teacher-training. A working group on medical teacher-training met in Warsaw in April to take stock of the facilities available for training teachers in their respective countries, and to find ways of making such facilities more widely available.

3.79 A WHO handbook on pedagogy for teachers of laboratory technicians was completed, following a trial made at the course in teaching methodology for such technicians held during the year in Lagos.

3.80 In response to requests from governments and teaching institutions for assistance in educational planning the Organization has given advice and support in organizing short-term training programmes for teachers at the University of Negev, Israel, the Ecole nationale de la Santé publique in Rennes, France, and as part of a number of intercountry or interregional activities.

Fellowships

3.81 The fellowships programme accounts for between 20% and 30% of most of the WHO regional budgets. The success of the programme results from its complete decentralization and depends upon the continuing cooperation between the fellow, his government, the regional office concerned and the receiving government. The general policy in granting fellowships encourages self-sufficiency by institution building through the training of personnel in the management and teaching procedures of institutions concerned with the development of health manpower and services.

3.82 In 1974, the training of teachers of all categories of health personnel continued to receive worldwide emphasis, and a demand has emerged for fellowships to prepare staff at the executive and policy-making levels of planning and administration. The use of fellowships for attendance at short courses and seminars is also a method frequently adopted in most Regions.

3.83 Contacts, whether between the Organization and the fellow at his place of study, or between WHO and national fellowships officers, although sometimes inadequate, are nevertheless considered essential if the quality of the programme is to be maintained and improved. In some Regions, personal contacts have been established through meetings with or visits from national fellowships officers, or visits of WHO staff to the countries concerned.

3.84 The procedures currently used in the fellowships programme were examined during the year and substantial revisions were proposed. These changes were discussed at a meeting of national fellowships officers of the Eastern Mediterranean Region held in Alexandria in October. It was the third of a series of such meetings, which provide opportunities for national fellowships officers and WHO staff to consider the management of the WHO fellowships programme in great detail.

3.85 From 1 December 1973 to 30 November 1974, WHO provided assistance to enable 5658 individuals to study abroad. The Organization awarded 3712 fellowships for study, including 226 for undergraduate study, and 1946 fellowships for participation in meetings or other educational activities organized by WHO, such as courses, seminars and workshops. Further information on fellowships awarded in relation to particular countries and projects may be found in Part III. Annex 7 summarizes the number of fellowships by subject of study and by Region.

3.86 A special mention should be made of the satisfactory results (83% qualified) attained in 1974 by the African WHO fellows studying undergraduate medicine and dentistry in Algeria, Belgium and France.

WHO staff training

3.87 During the year, courses in five official languages (Chinese, English, French, Russian and Spanish) were organized at headquarters with a total attendance of 359 staff members; language tuition was also provided in the Regions as required. Forty-five headquarters staff members attended short internal courses on management and interviewing skills, and 22 others attended speed-reading courses.

3.88 Seven staff members were granted study leave for periods of 9-12 months. Among the subjects studied were public health, medical education and nursing. Another 36 staff members had short periods of refresher training. A workshop on country health programming was organized at the Regional Office for Africa, Brazzaville, in March. It was attended by 20 participants, including WHO Representatives and senior headquarters and regional staff.

Cooperation with other organizations

3.89 In this chapter and in Table 2 mention is made of cooperation in the field of health manpower development with other organizations and agencies both within and outside the United Nations system. A few further examples are given below; some others will be found in Chapter 15.

3.90 A meeting of the ACC Sub-Committee on Education and Training held in February discussed interagency cooperation in the training of the agencies, own staff and of short-term consultants; it considered that staff training was one of the weakest elements in the activities of the United Nations system. WHO agreed to cooperate with UNESCO and UNITAR which were entrusted with a study of this subject, to be discussed by the Sub-Committee in 1975. WHO is also interested in cooperating with the intersecretariat working group on agricultural education and training, which comprises ILO, UNESCO and FAO, as regards auxiliary, intermediate and professional health workers in the fields of environmental health, health care, and health education. In conjunction with the above-mentioned meeting of the ACC Sub-Committee, fellowships officers from all the agencies discussed, and made recommendations on, ways of increasing the efficiency of their fellowships programmes.

3.91 WHO is collaborating with a number of other organizations in the field of health manpower planning. The United Nations, UNITAR, ILO and UNESCO were all represented at the consultation of experts on the multinational study of the international migration of physicians and nurses, which was mentioned in paragraph 3.5.

3.92 In the development of communication techniques, there has been close collaboration during the year with UNESCO, ITU and the International Organization for Standardization. WHO participated in an interagency working group held in Geneva in September-October, which laid the foundations for the preparation of an inventory of agency activities on educational technology that will facilitate future collaboration.

Table 2. Examples of training activities arranged or assisted by the Organization, 1974

Figures in parenthesis indicate the approximate numbers of participants.

STRENGTHENING OF HEALTH SERVICES	
<p><i>Health planning</i>—3 international basic courses in Spanish: Medellin, Colombia, April-Aug. (3) Lima, May-Oct. (10) Mexico City, June-Oct. (6)</p> <p><i>Development of national health planning</i>—regional seminar Bangkok, Dec. (20)</p> <p><i>National health planning</i>—sixth regional training course for health administrators or teachers in the health professions Manila, June-Aug. (13)</p> <p><i>Methods of increasing health service coverage in rural areas</i>—regional seminar Brazzaville, July (25)</p> <p><i>Health services in rural areas</i>—regional seminar for physicians and nurses Maracay, Venezuela, Nov. (40)</p> <p><i>Operational research in public health</i>—regional course Louvain-la-Neuve, Belgium, Sept-Oct. (11)</p> <p><i>Hospital maintenance and engineering</i>—workshop for participants from Central American countries Guatemala, May (13)</p> <p><i>Management of infectious diseases in infectious-disease hospitals and wards</i>—regional seminar Bangkok, Oct. (27)</p> <p><i>Clinical teaching of physiotherapy</i>—fourth interregional course for qualified physical therapists, in collaboration with DANIDA Holte, Copenhagen, Sept.-Nov. (19)</p> <p><i>Technical orthopaedics</i>—interregional training course for supervisors of prosthetic/orthotic centres, in collaboration with the United Nations, DANIDA, the International Society for Prosthetics/Orthotics, and the Red Lion and Sun Society of Iran Teheran, April-May (49)</p> <p><i>Organization of industrial health services</i>—national seminar for physicians and other health professionals, in collaboration with ILO Kuala Lumpur, March (40)</p> <p><i>Maintenance and repair of X-ray equipment</i>—course for engineers and engineering technicians Erlangen, Federal Republic of Germany; Delft, Netherlands; London, United Kingdom; Oct.-Dec. (9)</p> <p><i>Medical education methodology</i>—regional workshop, in English, for health science teachers Kampala, March (26)</p>	<p><i>Medical education in human reproduction, family planning and population dynamics</i>—regional course for medical teachers Denpasar, Bali, Indonesia, July-Aug. (30)</p> <p><i>Medical teacher training and continuing education</i>—regional course for medical teachers Bangkok, Nov.-Dec. (24)</p> <p><i>Community health aspects of medical education</i>—regional workshop for medical teachers Peradeniya, Sri Lanka, Dec. (24)</p> <p><i>Educational science</i>—course for medical teachers Peradeniya, Sri Lanka, Jan.-Feb. (15)</p> <p><i>Teaching methods</i>—regional workshop for teachers of social medicine Marseilles, France, Sept. (14)</p> <p><i>Educational planning</i>—third regional workshop Shiraz, Iran, Aug. (15)</p> <p><i>Teacher training</i>—regional workshops on curriculum development, on methods of evaluation, and on teaching/learning methods, for teachers in medical schools Sydney, Australia: March-April (15), June (18), Aug.-Sept. (17)</p> <p><i>Health aspects of family planning</i>—national seminar for teachers and administrators of nursing and midwifery Seoul, July-Aug. (51)</p> <p><i>Anaesthesiology</i>—eleventh interregional refresher course, in collaboration with DANIDA Copenhagen, June (18)</p> <p><i>Health personnel training</i>—regional courses (AFRO) in: English: in malaria control techniques, for physicians and for entomological technicians and malaria control assistants; in nursing and midwifery (refresher course); and in teaching methodology for senior laboratory technicians Lagos: Jan.-Feb. (11), Jan.-April (24), March-May (19), April-June (17) French: in laboratory techniques for trainee laboratory technicians; in health education methods and techniques (refresher course); in public health for senior national health personnel, and, also in public health, for nurses and midwives (post-basic course) Lomé: Sept. 1973-July 1975 (23), Jan.-Feb. (24), March-April (14), April-July (26)</p>

Table 2 (continued)

Public health—basic courses in Spanish:

for physicians, Cochabamba and La Paz, Bolivia, April-May (21)

for health professionals, Villarrica, Paraguay, July-Aug. (17)

Training in the internship period—course for medical teachers
Pondicherry, India, Jan.-Feb. (28)

Paediatric patient care—third and final phase of a sequential learning activity, for physicians and nurses

Colombo, Sept.-Nov. (21)

Public health—interregional course for public health administrators, in Russian

Moscow, Oct. 1974-July 1975 (10)

The value of medical assistants in improving the delivery of health services—regional seminar

Manila, Oct. (19)

Modern methods of management of nursing services—interregional training course, in collaboration with DANIDA

Copenhagen, Sept.-Oct. (18)

Planning and organization of educational programmes for the preparation of nursing personnel at different levels—workshop for nurse educators

Quito, November (26)

Maternal and child health nursing—intercountry seminar for service and teaching nurses

Lima, April (50)

Nursing auxiliary training programmes—course in Spanish for nurse educators

Mexico City, Sept.-Nov. (28)

National planning for nursing—regional course

New Delhi, Nov.-Dec. (18)

Teaching in schools of nursing—national course for nursing tutors
Rangoon, April-June (16)

Nursing—third regional seminar

Teheran, November (64)

FAMILY HEALTH

Organization of centres for the training of physicians in abortion care—two study tours for senior Indian obstetricians/gynaecologists

New Delhi; Novi Sad and Ljubljana, Yugoslavia; Stockholm; Newcastle-upon-Tyne, United Kingdom; Singapore:

May-June (9)

Oct.-Nov. (11)

Maternal and child health—interregional advanced course in English for senior maternal and child health administrators, in collaboration with UNICEF

Warsaw, Sept.-Oct. (12)

Nursing/midwifery care in maternal and child health and family welfare programmes—travelling seminar for midwives from Latin American countries

Cali, Colombia; Montevideo, Uruguay; Santiago, Chile; Aug.-Oct. (20)

Continuing education in administration of family programmes—technical seminar for administrators of regional training in administration of family planning programmes

Mexico City, Sept. (16)

Administration of family planning programmes—course for directors

Mexico City, Nov.-Dec. (30)

Family health and family planning—regional postgraduate course
Paris and Brussels, Jan.-Feb. (20)

Maternal and child care—regional course, in collaboration with UNICEF and the International Children's Centre

Paris, Oct.-Dec. (9)

Family health and population dynamics—regional refresher course for medical officers and senior midwives, in collaboration with UNICEF

Beirut, March (11)

Integration of maternal and child health services and family planning services into community health services—national seminar

Teheran, May (80)

Health aspects of integrated maternal and child health and family planning services, including maternity-centred family planning—national seminar

Damascus, Oct.-Nov. (80)

Role of nurses and midwives in family planning—regional seminar
Manila, Sept. (21)

Social paediatrics—regional course in collaboration with UNICEF and the International Children's Centre

Paris, April-June (8)

Rehydration therapy—regional course for senior paediatricians and medical officers

Dacca, March (17)

Neonatology—short regional course for senior paediatricians and paediatric nurses

Chiangmai, Thailand, Feb.-March (20)

Table 2 (*continued*)

Care of the newborn—short regional course
Madras, India, July-Aug. (32)

Teaching of child health—interregional course for senior teachers, in collaboration with UNICEF

London and Newcastle-upon-Tyne, United Kingdom; Dar es Salaam; Nairobi; New Delhi, and Hyderabad and Bombay, India; March-Dec (10)

Child health—regional refresher course for physicians, in collaboration with UNICEF

Beirut, April (19)

School health—regional refresher course for medical officers, in collaboration with UNICEF

Beirut, Jan.-Feb. (18)

School health—regional seminar
Rangoon, Oct. (20)

Nutrition—orientation course
Rangoon, May-June (30)

Nutrition for public health—second regional course, for public health physicians and teachers of preventive medicine, in collaboration with UNICEF, FAO and UNESCO

Teheran, Oct.-Dec. (21)

Nutrition education—intercountry seminar for staff from ministries of education, in collaboration with UNICEF, FAO and UNESCO

Khartoum, Jan. (25)

Health education in family planning—2 national seminars for community leaders and representatives of the village women's committees

Apia, April

Review of contraceptive practices—regional meeting
Dacca, June (24)

COMMUNICABLE DISEASES

Epidemiology and control of communicable diseases—interregional courses in:

English: Moscow, Aug.-Oct., and Alexandria, Egypt, Oct.-Dec. (14)

Prague, Aug.-Nov., and New Delhi, Dec. 1974-Feb. 1975 (15)

French: Paris, Oct.-Dec., Bobo-Dioulasso, Jan.-Feb. 1975 (13)

Epidemiology and control of tuberculosis—thirteenth interregional course in English for tuberculosis workers in key positions
Prague and Colombo, April-July (8)

Lyophilized BCG vaccine production—3 courses, in collaboration with DANIDA and with the WHO Collaborating Centre for Worldwide Reference for BCG Seed Lots and for Coordination of Control of BCG Products

Copenhagen, Feb.-April (2), May-July (2), Aug.-Oct. (2)

Advanced techniques for programming in tuberculosis—seminar for high-level health administrators engaged in planning and organization of national tuberculosis programmes, in collaboration with the National Tuberculosis Register, Oslo
Oslo, Oct. (6)

Epidemiology and control of tuberculosis—fifth regional course for heads of national tuberculosis programmes
Caracas, May-Aug. (18)

Tuberculosis bacteriology—eighth regional course in Spanish, for senior laboratory personnel
Caracas, June-Aug. (13)

Tuberculosis control—national seminar, in collaboration with the International Union Against Tuberculosis
Dacca, Oct.-Nov. (70)

Tuberculosis control—national seminar for medical officers and health workers of the national tuberculosis control programme
Shahhat, Libyan Arab Republic, July (120)

Tuberculosis control—ninth regional course
Tokyo, June-Oct. (6)

Tuberculosis and leprosy—sixth regional course for medical officers
Papeete, French Polynesia, May (11)

Diagnosis, treatment and control of leprosy—course in English
Paramaribo, Surinam, May (8)

Cholera control, clinical aspects—interregional course in English and French
Monrovia, Oct. (22)

Cholera vaccines—interregional seminar for bacteriologists on production techniques
Bombay, India, March (13)

Epidemiological surveillance and control of cholera—seminar for participants from Caribbean countries
Port-of-Spain, Aug. (19)

Administration of cholera control programmes—regional seminar
Washington, D.C., June (32)

Bacterial infections of the gastrointestinal tract—regional courses in:
English: Manila, Feb. (24)
French: Saigon, March (15)

Production and control of foot-and-mouth disease vaccines—course in Spanish on production techniques, in collaboration with the Inter-American Development Bank
Rio de Janeiro, Brazil, April-Dec. (28)

Meat inspectors—tenth and eleventh courses for veterinary assistants, livestock assistants and persons with equivalent experience, in collaboration with FAO and DANIDA
Athi River, Kenya, Jan.-June (20) and July-Dec. (20)

Table 2 (continued)

Natural foci of zoonoses—interregional travelling seminar in English and Russian for graduates in medicine, veterinary medicine, entomology or ecology

Moscow, Samarkand, Rostov-Jaroslavskij, USSR, September (17)

Milk hygiene—national seminar for milk hygiene inspectors
Mexico City, March (32)

Organization of veterinary public health services—interregional seminar
New Delhi, October (27)

MALARIA AND OTHER PARASITIC DISEASES

General malariology—regional course for professional and senior technical health personnel
Kuala Lumpur, Sept.-Nov. (20)

Filariasis and vector control—fourth regional seminar, in collaboration with the South Pacific Commission
Apia, July (18)

Parasitology, entomology and epidemiology—regional combined course for professional and senior technical health personnel
Manila, Sept.-Oct. (32)

VECTOR BIOLOGY AND CONTROL

Public health and economic aspects of rodent control—regional seminar
Alexandria, Egypt, Dec. (24)

Biology and control of urban rodent and vector populations—regional course for junior entomologists, in collaboration with DANIDA
Singapore, Nov. (20)

Safe and efficient use of pesticides in agriculture and public health in the English-speaking countries of Africa—seminar, in collaboration with FAO and the Industry Cooperative Programme
Nairobi, Oct.-Nov. (16)

NONCOMMUNICABLE DISEASES

Treatment and prevention of major cardiovascular diseases—sixth interregional advanced course for physicians, in collaboration with DANIDA
Copenhagen, Jan.-June (9)

Cardiovascular epidemiology—postgraduate course, in collaboration with the Scientific Council on Epidemiology of the International Society of Cardiology
Budapest, Aug. (36)

Control of stroke and rehabilitation of stroke patients—regional workshop

Madras, India, Feb.-March (20)

Psychopharmacology—second interregional course for teachers in medical schools, in collaboration with DANIDA

Bakkerne, Copenhagen, April-May (15)

Teaching of mental health—study group for representatives of Latin American schools of public health

Caracas, Dec. (16)

Neurological patient care—short regional course

Rangoon, Oct.-Nov. (32)

Mental health epidemiology and statistics—regional course in French for psychiatrists, statisticians and administrators

Brussels, June (12)

Biological psychiatry—course

Montreal, Canada, July 1973-June 1974 (3)

Oral oncology—interregional course for oral pathologists, in collaboration with DANIDA

Bakkerne, Copenhagen, June (15)

Methods for epidemiological surveys of oral conditions—third regional course

Moscow, May-June (12)

IMMUNOLOGY

Immunology of infectious diseases—interregional course, in collaboration with Swiss Technical Aid, at the WHO Research and Training Centre for Immunology

Lausanne, Switzerland, Sept. (13)

Cell-mediated and humoral responses, with special reference to malnutrition and infectious diseases in the tropics—interregional postgraduate course, in collaboration with DANIDA, at the WHO Research and Training Centre for Immunology

New Delhi, Sept.-Oct. (14)

Lymphocytes in vitro—interregional postgraduate course, in collaboration with the International Cell Research Organization and UNESCO, at the WHO Research and Training Centre for Advanced Studies in Immunology

Basle, Switzerland, Oct. (20)

Immunology—courses for English-speaking immunologists, at the WHO Research and Training Centres in:

Nairobi, June (10)

Ibadan, Nigeria, July-Sept. (10)

São Paulo, Brazil, Aug.-Dec. (14)

Beirut, July (16)

Singapore, May-July (16)

Isolation and estimation of immunoglobulins—course for English-speaking immunologists from African countries, at the WHO Research and Training Centre for Immunology

Nairobi, April (10)

Table 2 (continued)

Immunofluorescence and its applications—postgraduate course for English-speaking immunologists from African countries, at the WHO Research and Training Centre for Immunology
Nairobi, May (10)

Lymphocyte transformation and macrophage function—postgraduate course for English-speaking immunologists from Latin American countries, in collaboration with the Norwegian Agency for International Development, the Norwegian Save the Children Organization, the American Leprosy Mission and the British Leprosy Relief Association, at the WHO Research and Training Centre for Immunology
São Paulo, Brazil, June (12)

PROPHYLACTIC AND THERAPEUTIC SUBSTANCES

Laboratory diagnosis of Neisseria meningitidis infections—regional course in Spanish
San José, Costa Rica, Jan. (10)

Laboratory diagnosis of influenza—regional course on advanced techniques
Bogotá, Aug. (14)

Control of biological substances—regional course in Spanish
Mexico City, Oct. (20)

Vaccine and antisera control—regional training course
Teheran, Oct. (13)

Enteric bacteriology, including cholera—regional refresher course for microbiologists from central public health laboratories
Manila, Sept.-Oct. (13)

Quality control of drugs—fourth interregional course, in collaboration with DANIDA
Bakkerne, Copenhagen, May-June (24)

PROMOTION OF ENVIRONMENTAL HEALTH

Industrial hygiene—national course
Kingston, Jamaica, March (25)

Occupational health and industrial toxicology—regional course for occupational health practitioners
Ahmedabad, India, Dec. (25)

Industrial toxicology—international postgraduate course
Helsinki, Aug.-Sept. (40)

Occupational health—regional course
Sydney, Australia, Nov.-Dec. (25)

Environmental health engineering—second regional course
Lausanne, Switzerland, Jan.-Dec. (5)

Establishment and strengthening of environmental health services and institutions—national course for waterworks operators
Saipan, Trust Territory of the Pacific Islands, April (16)

Operation and maintenance of municipal water supply systems—national course for engineers
Manila, Sept. (17)

Nuclear medicine—interregional seminar for physicians and medical physicists, in collaboration with IAEA
Vienna, Nov. (13)

Radiation protection, inspection and supervision—postgraduate course for health and medical physicists, at the WHO International Reference Centre on Environmental Radiation
Le Vésinet, France, Nov. (10)

Radiotherapy in treatment of cancer of the uterus—course in Spanish
Mexico City, June (15)

Water pollution—course for Romanian research workers, teachers and chemists, at the WHO Collaborating Centre for Worldwide Reference and Coordination in Wastes Disposal
Dübendorf, Switzerland, March-April (16)

Solid waste management—third regional course in Spanish
West Virginia, USA, Aug.-Sept. (17)

Food hygiene—regional course for inspectors
Caracas, Jan.-Nov. (24)

Food hygiene—seminar for Latin American health, agriculture and food industry officials
Guatemala City, Oct. (50)

Food microbiology and hygiene—regional course for postgraduate epidemiologists and veterinarians
Zeist, Netherlands, Aug. (11)

HEALTH STATISTICS

Planning and management of national health statistics information systems—interregional travelling seminar for senior health administrators and health statisticians
Budapest and The Hague, May-June (15)

Family health statistics—workshop for national health statisticians and administrators from English-speaking African countries, in collaboration with ECA
Dar es Salaam, Oct.-Nov. (15)

Medical record science—regional postgraduate course
Alexandria, Egypt, Oct. 1974-June 1975 (12)

Medical records—courses for participants:
from the southern states of Brazil, Florianopolis, Brazil, May-Nov. (18)
from the Caribbean, Kingston, Jamaica, Sept. 1974-May 1975 (19)

International classification of diseases—courses at the WHO International Reference Centre for the Classification of Diseases, Caracas, Dec. and in
La Paz, May-June; São Paulo, Aug.; San Salvador, Oct.; San José, Nov.; Mexico City, Dec. (250)

Epidemiology and medical statistics—regional courses in:
English: London, Sept. 1974-March 1975 (2)
French: Brussels, Feb.-May (5)
Russian: Bratislava, Czechoslovakia, Sept.-Dec. (7)

4. COMMUNICABLE DISEASES

4.1 It was pointed out in the Annual Report for 1972¹ that the infectious diseases were the health problems most frequently singled out by the governments of the developing countries as causing the greatest concern in the 1950s and 1960s. This is still substantially true, and yet specific preventive measures exist against many diseases which remain uncontrolled in most of the developing world. Diphtheria, pertussis, tetanus, measles and poliomyelitis have to all intents and purposes ceased to be important public health problems in the more developed countries because efficient immunization programmes have been carried out there. By contrast, the first four of these diseases are still important causes of childhood mortality in the developing world and poliomyelitis is fast attaining there the epidemic proportions that were common in many temperate-climate countries before the advent of mass oral poliomyelitis vaccination.

4.2 Effective immunization programmes in these areas are beset with problems. On the operational side, there is a lack of trained manpower to carry out and supervise programmes and a lack of equipment, transport and facilities for the refrigeration of vaccines (cold-chains); treatment schedules are complex and require many doses; with large-scale production vaccines are not particularly expensive but they are often difficult to pay for owing to currency exchange problems; and the understanding and cooperation of the public have often not been obtained. On the technical side there are such matters as the sensitivity of vaccines to temperature and light, lack of information on optimum combinations, and lack of research on simple methods of administration (for instance, by mouth or by skin scratch instead of by injection).

4.3 To assist Member States to overcome these problems and to extend to their children in the susceptible age-groups the benefits of effective routine vaccination against diphtheria, measles, pertussis, poliomyelitis, tetanus, tuberculosis, smallpox and, where necessary, other diseases, the Organization initiated an expanded programme on immunization in 1973. In April 1974 a consultation was held to advise on the design of feasible programmes suitable for developing countries and to provide clear guidance on operational and technical problems, on costs and

logistics, and on simple methods of evaluation. In May the World Health Assembly discussed the matter at length and adopted resolution WHA27.57 in which it recommended that Member States develop or maintain immunization programmes against the common childhood diseases and requested the Director-General to assist Member States in developing their own programmes and in assuring the availability of good-quality vaccines.

4.4 Guidelines have been drawn up on the planning of immunization programmes in countries and on their management and evaluation; these are now being tested in collaboration with a certain number of national authorities. At the same time a form of inventory is being drawn up of the health services that are directly concerned with immunization to enable national authorities to assess their programmes and the factors adversely affecting them. Basic standard information on vaccines is being assembled for provision to any country requesting it, and detailed manuals concerning vaccine storage and administration and other operations are being written. A study is also being made of the cold-chains that are available on the market for storing vaccine in field conditions. The Organization is seeking to involve vaccine producers, commercial and governmental, in the immunization programme and is taking steps to ensure the proper quality of vaccine.

4.5 Operational studies are starting in Ghana and Kenya to test ways of simplifying vaccination programmes and enhancing their cost/effectiveness. Assistance to other countries will not await the outcome of these investigations, but relevant experience gained in any country will be useful for the benefit of all national programmes. In November the first of a planned series of seminars on immunization programmes in developing countries was held in Ghana and was attended by participants from 11 countries in the African and Eastern Mediterranean Regions and representatives of UNICEF, SIDA and the Organization for Coordination and Cooperation in the Control of Major Endemic Diseases (OCCGE). The report of this seminar, which considers how to overcome the various operational constraints already referred to, is intended to help national authorities in planning, carrying out and evaluating their own programmes.

¹ *Off. Rec. Wld Hlth Org.*, 1973, No. 205, paragraph 1.1.

4.6 Contacts have also been established with international development agencies and institutions and with bilateral assistance bodies for possible financial assistance towards programmes in developing countries, through a special account in the Voluntary Fund for Health Promotion. A number of agencies or institutions have already expressed interest. To help to overcome currency exchange difficulties, the Organization has made arrangements to facilitate the purchase of vaccines by Member States in their national currencies.

4.7 The expanded programme on immunization provides a good example of the paramount need to unify activities in numerous different disciplines—immunology, child health, strengthening of health services, biological standardization, and so on. The control and treatment of the diarrhoeal diseases and cholera represent an even more complex task. The elements of such a programme include education of mothers, improvement of nutrition, provision of safe water, provision of simple treatment (e.g., oral rehydration) at the peripheral level, food hygiene, fly control and the disposal of wastes. The Organization is taking the first steps to provide countries with guidelines for national action in the development of the necessary activities and to interest funding agencies in assisting well-designed national programmes. To formulate and carry out realistic programmes numerous disciplines in medicine, hygiene, sociology and economics must work together. Obviously an expanded programme for the control of cholera and the other diarrhoeal diseases will develop more slowly than the relatively straightforward expanded programme on immunization.

Epidemiological surveillance of communicable diseases

4.8 Seeking to encourage the further improvement of national communicable disease control programmes, the Organization placed emphasis on making the maximum use of the existing facilities for prompt and accurate reporting of diseases to provide a sound basis for implementing specific remedial action such as the improvement or modification of immunization programmes or well defined environmental health measures. At the international level, in administering the International Health Regulations (1969), every effort has been made to encourage prompt and complete reporting from countries in order to allow WHO to fulfil its obligation to operate a warning mechanism that enables health administrations to be on guard through efficient surveillance rather than through the imposition of excessive frontier controls.

4.9 The daily automatic telex reply service that WHO has operated since 1973 to make available the urgent communicable disease information of which it has knowledge has by no means reached its full potential as an aid to the prompt and economical dissemination of such news because Member States are not yet making full use of it. An important factor limiting the usefulness of the service is the delay in reporting information to the Organization or the failure to do so. All too often it is through the news media—and with a degree of accuracy and an emphasis that may be very variable—that health administrations learn of a communicable disease situation beyond their borders that may affect their own countries. Turning to WHO for confirmation and guidance can be discouraging if the Organization has not been informed.

4.10 The *Weekly Epidemiological Record*, in addition to repeating the substance of the telex messages, provides notes, technical guides and review articles on a wide range of communicable diseases. With the prospect of smallpox eradication within reach, regular surveillance reports from the remaining endemic foci were a feature of the *Weekly Epidemiological Record*. More than two thousand reprints of these reports keep smallpox workers in the field aware of the overall situation and act as a stimulus to maintain their efforts, even in areas where progress is difficult. As regards malaria, the *Record*, as well as reporting on eradication and control, emphasized the need to prevent needless loss of life by bearing in mind the possibility of an early diagnosis of malaria when travellers fall sick on return to countries where the disease does not normally occur.

4.11 The number of cases of human plague (some 2500) notified in 1974 was three times that in 1973, mainly owing to quite large outbreaks in Brazil, Burma, and the Republic of Viet-Nam. There is considerable variation in the systems of reporting in different countries and underreporting is probably frequent owing to a lack of facilities for confirming a diagnosis of plague. As the possibility of the international spread of this disease is ever present, it is important that effective surveillance be continued, particularly in areas with persistent natural foci of plague.

4.12 A few more countries or territories officially notified cholera in 1974 than in the previous year, but the fear of overreaction with respect to travel requirements and restrictive trade practices continues to affect the quality of cholera reporting. A vicious circle is perpetuated because health administrations, in the absence of official reporting of cases, often take

unjustified measures against countries that do not report or grossly underreport, and the latter's fears of reporting are thereby strengthened. Meetings of representatives of health administrations or the facilitation of direct, bilateral, unofficial and personal contact between health staff directly involved can lead to better understanding of a given situation and greater confidence in the eventual outcome. For instance, an informal meeting held in Geneva in July¹ brought together representatives of the Governments of France, Portugal, and Spain to discuss the cholera situation with WHO. Agreement reached at meetings such as these facilitates international traffic. The experience of the past decade shows clearly that the international spread of cholera cannot be prevented either by vaccination or by preventive medication. The protection of populations depends mainly on sanitation and other public health measures and, in particular, on intensified surveillance of diarrhoeal disease and education of the medical profession with regard to early diagnosis and the role of rehydration in severe cases of acute diarrhoea. The efficacy of such measures was well demonstrated by the fact that, although some cases of cholera were imported into other countries of the European Region by tourists returning from Portugal, efficient diarrhoeal disease surveillance and adequate environmental sanitation prevented the occurrence of secondary infections of any consequence.

4.13 The Additional Regulations of 23 May 1973 amended the International Health Regulations (1969) to the effect that countries bound by the Regulations should no longer require cholera vaccination certificates from international travellers, even though they may come from infected areas. These Additional Regulations have not been fully implemented, but there is nothing in the experience of 1974 to suggest that this decision of the World Health Assembly has in any way eased the international spread of cholera.

4.14 One of the major limiting factors encountered in the collection and dissemination of epidemiological information for disease control and planning of health services is the lack of qualified personnel. Activities to remedy this situation are dealt with in Chapter 3.

4.15 In the African Region a third intercountry epidemiological surveillance centre was set up in Brazzaville; this is in addition to the centres already operating in Abidjan and Nairobi to receive and process communicable disease information from Member States. The data form the basis for the planning and organization of national epidemiological surveillance activities and for the improvement of opera-

tions, including immunization against communicable diseases. In the Region of the Americas an intercountry surveillance plan was approved for the Caribbean area, with the Trinidad Regional Virus Laboratory serving as the Caribbean epidemiology centre. In accordance with the Ten-year Health Plan for the Americas many countries have made efforts to improve the epidemiological surveillance of the most important communicable diseases. In 1974 particular emphasis was given to surveillance activities in Bolivia, Colombia, Dominican Republic, Ecuador, Guatemala and Honduras. Seminars on cholera control were conducted in Port-of-Spain and in Washington, D.C., in view of the ever-present possibility of the importation of cases into the Region. Cholera and diarrhoeal diseases were also matters of serious concern in the South-East Asia Region, notably in Bangladesh, India and Indonesia. Both in that Region and in the Eastern Mediterranean, the surveillance of smallpox was, of course, of paramount importance to the eventual outcome of the eradication campaign. Assistance for planning and carrying out multipurpose epidemiological surveys in the area of the Rahad irrigation scheme was provided in Sudan. In the Western Pacific Region there has been a continued need to provide assistance for developing epidemiological services; owing in large measure to a shortage of trained epidemiologists and of supporting laboratory services, the production and exchange of meaningful communicable disease information have remained at an unsatisfactory level. As noted in paragraph 4.51, dengue haemorrhagic fever has been increasing in the Western Pacific and South-East Asia Regions (some 14 000 cases were reported for 1973 in the Republic of Viet-Nam), and the newly created Technical Advisory Committee on Dengue Haemorrhagic Fever has laid particular stress on the rapid detection of outbreaks as a major aim of any programme for the surveillance and control of this disease. The prevention of the intercountry spread of communicable diseases was the subject of a WHO conference held in June in Izmir, Turkey, which was attended by participants from the majority of countries in the European Region. Preventive measures to be taken both nationally and internationally were recommended, and the importance of international co-operation and exchange of epidemiological information between countries was once again brought out.

4.16 The WHO *Salmonella* surveillance programme that started in 1967 in the European Region now involves more than 30 national laboratories in all continents. It has made it possible for the Organization to assist national epidemiological services in the international aspects of their investigations of disease

¹ *Wkly epidem. Rec.*, 1974, 49, 269-270.

outbreaks connected with infections imported in contaminated food products or by persons coming from abroad. With the large amount of information that the Organization now has on the association of certain organisms with certain countries or certain animal or food sources, it was able, on several occasions during the year, to help to determine the country of origin and the chain of transmission of infection, using as an epidemiological marker the serotype or phage type or the spectrum of antibiotic resistance. It has become evident that antibiotic-resistant strains of *S. typhi* and other salmonellae often have a special epidemic potential. It has also been possible to collate data concerning cases where importation by man of *Salmonella* strains other than *S. typhi* or *S. paratyphi* was followed by a wide spread on a national scale; paediatric hospitals in some countries have been instrumental in this propagation, for instance, through children or hospital staff who return from holidays abroad carrying an antibiotic-resistant strain.

4.17 In addition to the surveillance programme on salmonellae, a comprehensive programme of surveillance of foodborne disease outbreaks of biological origin was initiated in 1974 with the aim of covering all biological etiologies (bacteria, parasites, viruses, etc.). Nine countries with a national system of surveillance of foodborne disease outbreaks have been contacted to obtain their collaboration, and six have already informed WHO of their interest in participating. By facilitating assessment of the impact on human health of food contaminants of biological origin, both these programmes will contribute to the UNEP-associated programme of food contaminant monitoring (see paragraph 10.75).

Committee on International Surveillance of Communicable Diseases

4.18 The Committee on International Surveillance of Communicable Diseases held its eighteenth session in February 1974. In May the Twenty-seventh World Health Assembly approved the recommendations in the Committee's report subject to the comments and modifications contained in the report of a Working Group of Committee B of the Health Assembly (resolution WHA27.45).¹ The Health Assembly considered that a broad review of the basic concepts of the International Health Regulations would be timely and that the question should be referred to the next meeting of the Committee on International Surveillance of Communicable Diseases. One of the subjects to which the Committee had given attention was the safety of food and drinking-water and the handling of

wastes in international traffic, and on this the Health Assembly adopted a separate resolution (WHA27.46); in pursuance of that resolution and of the Committee's recommendations a consultation on this subject, described in paragraph 10.35, was held in December. According to the terms of a third resolution (WHA27.47), the Health Assembly also decided not to accept the reservations communicated by certain Member States regarding the Additional Regulations of May 1973 to the International Health Regulations (1969); these States have been requested to withdraw their reservations.

4.19 In connexion with the epidemiological surveillance of communicable diseases and vectors, the Committee recommended that health administrations undertake, as a matter of urgency, to identify all laboratories in their countries that had strains of organisms of diseases subject to the Regulations and other highly dangerous or exotic organisms and vectors and to determine the capacity of these laboratories to contain such organisms and vectors. In view of difficulties encountered in the international transport of Lassa fever cases, this subject was discussed by the Committee and at the consultation in May referred to in paragraph 4.55.

Smallpox

4.20 During 1974, the pace of activities in the global smallpox eradication programme was greatly intensified as increasing resources were brought to bear on a decreasing area. Most valuable contributions to the Special Account for Smallpox Eradication of the Voluntary Fund for Health Promotion (see also paragraph 14.19) in cash, kind or services were received during the year from 19 countries,² and the Organization itself was able to increase its financing of the programme by use of part of the funds released for other purposes as a result of China's declining the assistance envisaged by WHO for 1974 and 1975.³ Activities were concentrated on the afflicted areas of the four countries where smallpox was still endemic—Bangladesh, Ethiopia, India, and Pakistan. In the Asian countries, cash rewards were offered to persons who detected outbreaks that were not known to the health staff. By the end of the year it seemed that smallpox had effectively been eliminated from all but four districts of Bangladesh, three states of India and four provinces of Ethiopia. Special programmes

² Belgium, Brazil, Canada, Colombia, Czechoslovakia, Finland, Ghana, Greece, Guinea, Iran, Japan, Kenya, Netherlands, Sweden, Switzerland, Uganda, United Kingdom, USA, USSR.

³ See resolution EB53.R25, adopted by the Executive Board in January 1974.

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 217, Annexes 8 and 9.

involving more national and international staff than ever before were in progress in both these and adjoining areas in an effort to reduce transmission and susceptibility to a point that might allow the last foci to be eliminated in 1975. In Pakistan, where numerous foci continued to be discovered in the earlier part of the year, transmission appeared to have been interrupted by December. Health workers were, however, continuing to search actively for possible hidden outbreaks in remote areas.

4.21 Expressed in terms of extent, it may be said that whereas, eight years ago, when the intensified global eradication programme was launched, 30 countries had endemic smallpox and 13 others reported cases due to importations, by December 1974 endemicity was restricted to parts of only three countries and only nine in all (including those three) had experienced any cases during the year. The areas of endemicity that remained constituted less than 3% of the land area affected in January 1967.

4.22 Paradoxically, however, the number of reported cases again increased in 1974—to more than 218 000 as against some 136 000 in 1973. Major epidemics occurred in the Indian states of Bihar and Uttar Pradesh and many outbreaks in adjacent states and countries occurred as a result of importations from them; these two states alone accounted for 75% of all cases reported throughout the world. The epidemics may not be unrelated to the fact that classically smallpox incidence in India has shown a cyclical upsurge at intervals of four to seven years and that the last widespread epidemics in the afflicted areas occurred seven years previously. In the interim, vaccination activities had been comparatively neglected in these states, leaving a large population susceptible to infection. Undoubtedly, however, the recorded incidence was particularly high owing to the much more complete reporting of cases that followed the institution of a radically new approach to case detection that was first applied in India late in 1973 and was gradually improved and extended throughout the sub-continent. The new system calls for participation of health workers of all categories in a complete village-by-village search in rural areas and a house-by-house search in urban areas during a one-week period every four to six weeks. A great many outbreaks and cases that might otherwise never have been detected and reported were discovered in this manner and contained. By mid-1974, it was believed that not less than 80%, and in many areas more than 90%, of all cases were being detected. This gave grounds for hoping that the programme might progress more rapidly, and by the year's end this had proved to be the case. Largely as a

result of substantial funds made available by the Government of Sweden, additional transport could be provided, many more epidemiologists could be deployed both to the most heavily afflicted parts and to their surrounding areas to provide on-the-spot supervision and guidance, and additional support could be given to permit local staff to make longer stays in the afflicted villages for more efficient containment. The complement of staff in the field was gradually increased during the year, reaching in August what was felt to be an optimum level.

4.23 In May, more than 9000 villages and municipal wards of cities in Bangladesh, India and Pakistan had experienced one or more cases of smallpox during the preceding four weeks and had to be kept under surveillance; by early August the number had fallen to 5000, by early September to 3000, and by the end of the year to less than 500.

4.24 In Asia, besides the three countries with endemic smallpox, only two other countries experienced the disease. Japan had a single case imported in January; but Nepal, sharing a long open border with Bihar and Uttar Pradesh, recorded more than 120 importations, ultimately giving rise to 1550 cases. Nepalese staff, however, were able to contain most of these outbreaks before they spread; only 30% of the outbreaks occurred as a result of subsequent spread from importations.

4.25 In Africa, Ethiopia remains the only country with endemic smallpox, the known endemic areas within that country in December being parts of only four of the provinces. These areas were in the rugged central highlands of Gojjam, Shoa, Wollo and Begemdir, where travel is difficult and there is considerable resistance to vaccination. The number of recorded cases in Ethiopia declined from 26 000 in 1971 (the first year of the eradication programme there) to 5400 in 1973 and to 4500 in 1974. In the comparatively limited areas affected, more complete recording of cases was made possible by the greater number of field staff. Additional help was also provided during the year, in a remarkable display of international assistance and cooperation, by teams from Kenya, Sudan and the French Territory of the Afars and the Issas who worked together with Ethiopian teams in critical border areas. Volunteer health workers from Austria, Japan and the USA are also assisting. Further, the Public Health Service of the USA provided funds making it possible to use two helicopters for three months, beginning in November.

4.26 The only other countries or territories in Africa to detect smallpox cases during 1974 were Kenya (4 cases), Somalia (11 cases) and the French Territory of the Afars and the Issas (13 cases); all these cases had been imported into areas bordering on Ethiopia. The last cases elsewhere in Africa were in Sudan in December 1972 and in Botswana in December 1973. Since then, active case-seeking has continued through WHO-assisted programmes and many rumours and alarms have called for special investigations, but no case has been found.

4.27 In the Americas, where the last case of smallpox was detected in April 1971, an international commission in August 1973 officially declared that the eradication of smallpox had been achieved. A second international commission was convened in April 1974 in Indonesia, where no case had been detected for more than 28 months. After a full review of activities during the preceding two years and field visits, the commission declared that it was satisfied that Indonesia also had eradicated smallpox. Similar appraisals will be conducted in the two remaining epidemiological target areas—Africa and the Indian subcontinent—when at least two years have elapsed since the last cases there.

4.28 As more countries or areas are freed of endemic smallpox, the need grows to verify with absolute certainty the cause of any smallpox-like illness that occurs there. During the year 263 specimens from suspected patients in 13 countries were processed by the WHO Collaborating Centres for Smallpox and Other Poxvirus Infections in Moscow and in Atlanta, Ga., USA. In Utrecht, Netherlands, and Toronto, Canada, the WHO Collaborating Centres for Smallpox Vaccine tested 227 batches of vaccine from production laboratories in different countries; this is a random sampling amounting to the monitoring of more than 200 million doses.

4.29 Only a single human case of monkeypox was detected (in Zaire) during the year, bringing the known total to date to 18 cases. The cause of the less frequent discovery of cases is unknown as surveillance activities go on without interruption and the number of specimens submitted for investigation did not decline. Eleven laboratories are continuing a variety of research studies of this and related poxviruses but, as yet, the reservoir of the virus remains a mystery. The conclusion earlier reached by investigators collaborating in these studies remains valid—namely, that it is highly unlikely that there is any natural reservoir for smallpox other than man.

Virus, chlamydial, rickettsial and related diseases

4.30 The WHO Collaborating Centres for Reference and Research on Viruses, the WHO Virus Collaborating Centres and the national influenza centres continued providing in 1974 an efficient support to WHO's programme in virology and related diseases. In collaboration with national laboratories, the centres carried out surveillance of viral diseases and applied their research capacities to improve viral diagnostic methods. From a listing of the virus laboratories in the world that the Organization is preparing, it is apparent that the number of such laboratories has increased in developing countries over the past five years, although they are still relatively sparse; a good part of the progress made is due to the training which collaborating centres have provided to young virologists.

Reagents programme

4.31 The initial purpose of the WHO virus reagents programme has been to establish international reference preparations of strains of viruses and their antisera¹ through a series of collaborative assays carried out by collaborating centres and national laboratories. This has been almost completed except for a small number of viruses for which work is still in progress; the last series of adenoviruses is now being prepared for WHO by the Center for Disease Control, Atlanta, Ga., USA.

4.32 A more recent development in the programme is the supply of virus antigens to newly established virus laboratories, mainly in developing countries. The first phase—now commencing—consists in the preparation and testing through collaborative studies of a limited number of antigens most currently used in serological diagnosis. Standard methods for testing will be developed to allow for comparison of results from different laboratories, which will receive positive and negative coded sera together with the antigens, in order to test the accuracy and reproducibility of their results. A pilot collaborative study on the identification of poliovirus strains, the neutralization test for serodiagnosis of poliomyelitis, and the complement-fixation test for adenoviruses and arboviruses has been started with several laboratories in the Mediterranean area.

WHO team for special studies in virology in Africa

4.33 As reported previously, this team, at the East African Virus Research Institute, Entebbe, Uganda,

¹ World Health Organization (1972) *Biological substances*, Geneva.

has found that one reason for the poor response to live poliovirus vaccines that is sometimes seen in children in tropical countries is that a substance in the saliva and the throat inhibits the multiplication of polioviruses.¹ The team has now shown this inhibitor to be present in 60% of the children up to 4 years old investigated; in 40% there were fluctuations in the level of the inhibitor. The study has also shown that children with kwashiorkor have a good serological response after vaccination; on the other hand, the seroconversion rate after vaccination is lower among children who excrete enteroviruses at the time of vaccination than among those who do not.

4.34 The team's study of viral infections of the upper and lower respiratory tracts in more than 1000 children has provided interesting preliminary results. Myxoviruses—mainly respiratory syncytial virus and parainfluenza virus types 1-3—and adenoviruses are the major respiratory tract pathogens in early life, being responsible for more than 25% of all respiratory tract infections and for 38% of lower respiratory tract diseases (bronchopneumonia and bronchitis). Other viruses found in respiratory tract infections included, in addition to influenza A and B viruses, enteroviruses such as coxsackie B, and echoviruses. In contrast, *Mycoplasma pneumoniae* seemed to play a minor role in the age-group studied. The study is being extended to older age-groups and the possible role of rhinoviruses is to be investigated.

Virus reporting system

4.35 More than 40 000 reports were received by WHO in 1974 from the laboratories in the 43 countries that are participating in the WHO system of collection and dissemination of information on virus infections other than arboviruses.

4.36 An analysis of laboratory reports on viral infections of the respiratory tract received over the seven-year period 1967-73 has yielded some interesting results. It is striking that, although influenza is difficult to diagnose with certainty on clinical grounds alone, there was a remarkable degree of agreement during the period analysed between epidemiological reporting based on clinical records and the laboratory reports, so that it may be possible in future to give more credence to reports of influenza outbreaks that are not confirmed by laboratory tests.

4.37 In the northern hemisphere, from laboratories in which more than 95% of reports were received, a clear seasonal pattern of incidence of respiratory tract infections emerged. Over the seven-year period, the peak number of reports on parainfluenza viruses was in October, on influenza A virus in January, on respiratory syncytial viruses in February, and on influenza B virus in March. Rhinoviruses and mycoplasmas gave some indication of a seasonal pattern, with a preponderance of reports in autumn. Adenoviruses showed no definite seasonal variation. Some 70-80% of the total number of reports on adenovirus and parainfluenza virus, and over 90% of reports on respiratory syncytial virus concerned children (defined for the purpose of this study as those under 15 years old). Mycoplasma infections, on the other hand, were most frequently reported in adults. Influenza A virus infection was predominant in the adults, with a high proportion in the age-group 60 years and over; in contrast, influenza B was reported equally in adults and children, but over one-third of the infections were in the children of school age (5-14 years). The proportion of lower respiratory infections to total respiratory infections ranged from less than one-half for adenovirus to more than four-fifths for mycoplasma infections.

Influenza

4.38 The pattern of influenza in the 1973-74 season was unusual in the northern hemisphere generally. Influenza viruses A and B caused outbreaks during the winter but the usual timing of the peak of infection for each type of virus was reversed, with the brunt of the influenza B epidemic occurring in winter and of influenza A in spring. More usual was the fact that in many countries outbreaks of influenza B occurred in schools and institutionalized groups more frequently than in the general population. The infection was most common between 1 and 24 years of age and especially in 5-9-year-old children. The widespread distribution of influenza B is indicated by the fact that a far greater number of isolates (347 from 41 countries) was submitted to the two WHO Collaborating Centres for Reference and Research on Influenza than in previous years. Strains resembling the classical 1967-70 influenza B virus became infrequent, being largely replaced by the new strain B/Hong Kong/5/72 and by strains intermediate between that and the classical strains. Several isolates of the classical type were still submitted from epidemics in the Federal Republic of Germany, however, as late as early 1974, although the newer strains were also found there.

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 1.28.

4.39 A striking feature has been the association of influenza B both geographically and temporally with the appearance of Reye's syndrome in the USA during both the 1970-71 and 1973-74 winters. This syndrome—involving noninflammatory encephalopathy and fatty infiltration of the liver, with a high mortality in children and young adults—was first described in 1963, and a variety of viruses have been suggested as its cause. The possible role of influenza B in the causation of Reye's syndrome needs further documentation, and the relationship of earlier influenza B infection and immunity to the development of Reye's syndrome needs to be confirmed.

4.40 Few infections with influenza virus A were reported throughout January and February, and the numbers began to rise only in March after the peak of influenza B infection had already been reached. In general, influenza A virus produced only a minor epidemiological impact during the year, though large outbreaks were reported in some areas (e.g., Hong Kong, Malaysia and Singapore). The A/Port Chalmers/1/73 variant became the predominant strain in most of the world, A/England/42/72 becoming infrequent. However, from the beginning of 1974 strains exhibiting some antigenic difference in their haemagglutinin from the Port Chalmers variant were also isolated in various countries.

4.41 In the southern hemisphere a number of sizeable outbreaks were associated with influenza virus A in South America, South Africa, Australia, and New Zealand. Outbreaks in these last three countries were almost exclusively caused by Port Chalmers strains until towards the end of the epidemic season, when variants similar to those just described began to appear.

4.42 The worldwide reservoir of influenza A viruses in domestic and wild mammals and birds was outlined in the Annual Report for 1973¹ and the search for these viruses in many parts of the world was actively pursued during 1974. Strains of influenza virus A have been isolated in the United Kingdom from imported parrots and specific antibody has been found in cattle in Romania. Some hundreds of sera collected from birds in 10 different areas of the world in connexion with WHO arbovirus studies are now also being tested for influenza antibodies with the assistance of the World Influenza Centre, London. The study is not yet complete but a number of positive results have been obtained with sera from birds in areas not previously studied.

4.43 Experiments on the hybridization of influenza strains *in vivo* have continued at the Plum Island Animal Disease Laboratories, New York, USA. Success in obtaining hybrids has previously been reported, but the hybrids failed to spread and therefore were not a complete model for the emergence of new pandemic strains. More recent experiments have now led to the creation of some hybrids that spread readily by contact and thus mimic the development of a new pandemic strain. The theoretical evidence that human pandemics may arise in this way is now complete.

4.44 An informal meeting of WHO collaborators concerned with influenza in animals was held in December to review progress and plan further investigations.

Poliomyelitis

4.45 In April a consultation on poliomyelitis was held at which the Organization's programme on this disease was reviewed, in particular the WHO inquiry in 11 countries into the relation between acute persisting spinal paralysis and poliovirus vaccine.² A total of 251 cases of spinal paralysis persisting for more than six weeks has been reported to WHO since the inquiry began in 1970; 144 of these were associated in time with vaccination. Further investigations are still required.

4.46 A WHO interlaboratory study on marker tests related to this inquiry has shown relatively good agreement between the laboratories on the results of the temperature marker test (rct) for types 1 and 2 poliovirus strains at 40.1°C and for the type 3 strains at 39.5°C. The results of the intratypic serodifferentiation marker test were in good agreement for most strains of all three types. This study was also reviewed at the April consultation, and it was emphasized that no conclusion as to the origin of a strain—whether natural or used in vaccine—isolated from a case of poliomyelitis could be drawn exclusively from the results of the rct marker test.

Viral hepatitis

4.47 The first phase of a collaborative study to evaluate a WHO antiserum to detect hepatitis B antigen was successfully completed in 27 laboratories in as many countries. Even when used in seven different methods of testing, this serum proved to possess high sensitivity and specificity. This will now make it possible to obtain comparable results from different laboratories on the prevalence of hepatitis B antigen by

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 1.37.

² *Off. Rec. Wld Hlth Org.*, 1973, No. 205, paragraph 1.59.

age and sex in the general population in different areas of the world. Population groups with a high percentage positive for this antigen can therefore now be identified and selected for special studies.

4.48 The progress that has been made in viral hepatitis since the 1972 meeting of a WHO scientific group¹ has made it necessary for the Organization to review recent developments, and this was done at a consultation in October. It was noted that evidence is accumulating to suggest that the double-shelled particles seen in the blood of patients with hepatitis B may be the complete virus, with a core and an outer protein coat that provoke the appearance of core and surface antibodies. The use of more sensitive techniques for the detection of hepatitis B antigen has brought about a reduction in post-transfusion hepatitis, but some cases still occur. On the other hand, a number of recent studies have failed to show that there is any significantly greater risk of hepatitis B among persons given transfusion of antibody-positive blood than among those given blood from antibody-negative donors. However, hepatitis B continues to be a major problem among both patients and staff in haemodialysis units. It was also noted that, although no convincing evidence has been obtained that hepatitis B virus multiplies in mosquitos, there is nevertheless a possibility of mechanical transmission through bites. No method of cultivating the virus has been found, but the purification of material from the outer protein coat suggests the possibility of preparing an inactivated vaccine; however, carefully controlled studies are needed before such a vaccine can be generally administered. With regard to hepatitis A, it was noted that the virus has now been successfully transmitted to chimpanzees, as well as to marmosets; and that in both nonhuman primates and man there is a close association between the finding of virus-like particles in faecal extracts and hepatitis A infection.

Arboviruses

4.49 Data that became available in 1974 have modified the picture of jungle yellow fever in the Americas given for 1973,² and it has become clear that there had been a marked recrudescence of cases, mainly in Bolivia (86), Brazil (67) and Peru (33). The main feature was the southward progression of the virus in the State of Goiás, Brazil, a classical pathway followed by the virus in *Cebus* monkeys in forests every six to ten years and one which may extend as far as the north of Argentina. In 1974 the number of cases in the Americas, and particularly in Brazil, was smaller.

However, the few cases that occurred in the south of Mato Grosso, Brazil, and in the neighbouring area of Pedro Juan Caballero in Paraguay—the first time the virus has been reported to WHO from this country—are confirmation of the southward movement. More than 400 000 vaccinations have been performed in Brazil among the population at risk. The absence of the urban vector, *Aedes aegypti*, in the infected areas will limit the danger. Another important event is the confirmation of four cases of jungle yellow fever in the District of Chepo, Panama—two in February and two in August. Although these cases were located in the Darien Jungle, there is a risk that the virus will cross the Canal and progress north through Central America as it did from 1948 to 1957. The potential threat of urban yellow fever in those Caribbean areas still infested with *Ae. aegypti* was among the matters considered in May at a meeting of the PAHO Scientific Advisory Committee on Dengue Fever, since both diseases are transmitted by this vector. Vaccination has been carried out with 17D vaccine supplied by the Governments of Brazil and Colombia, and the campaign to eliminate *Ae. aegypti* has been intensified.

4.50 In Africa, the epidemics of urban yellow fever which occurred in several countries in 1969 were followed by only a few cases of jungle yellow fever. In 1974, however, 23 cases of jungle yellow fever (10 of them fatal) were diagnosed in April in Uyo Division, South-Eastern State, Nigeria. Another, also fatal, occurred in Zaire in August. The question of how the virus can escape from its cycle in wild animals remains unexplained and is the subject of field studies by the Pasteur Institute, Dakar, in forest areas of eastern Senegal, where there is some evidence of the presence of the virus.

4.51 It is now evident that a recrudescence of dengue has occurred in the South-East Asia and the Western Pacific Regions since 1970 on an even greater scale than was earlier recognized. Dengue virus type 2 has invaded most of the islands in the South Pacific and some cases with a severe haemorrhagic syndrome have occurred. Preliminary laboratory data confirm the appearance of dengue type 1 in the same area in 1974; the concurrent presence of several types of dengue virus creates a potential danger of many more haemorrhagic cases. In Indonesia, Malaysia, Republic of Viet-Nam, Singapore and Thailand, epidemics of dengue haemorrhagic fever have occurred for the last three years. In order to coordinate surveillance and control measures a Technical Advisory Committee on Dengue Haemorrhagic Fever for the South-East Asia and Western Pacific Regions was created by the Organization in 1974. The Committee, which is composed of ten members—clinicians, entomologists,

¹ *Wld Hlth Org. techn. Rep. Ser.*, 1973, No. 512.

² *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 1.45.

epidemiologists and virologists with practical experience of dengue haemorrhagic fever in their countries—has prepared technical guides on diagnosis, treatment and control of the disease and has outlined the fields where applied research is necessary.

4.52 Inactivated antigens for dengue, chikungunya and Japanese encephalitis virus were provided by the WHO Virus Collaborating Laboratory at the Ivanovskij Institute of Virology, Moscow, to ten virus diagnostic laboratories in the South-East Asia and Western Pacific Regions. Known positive and negative sera were sent under coded numbers together with the antigens and were used for a collaborative study of the standardization of techniques and the reproducibility of results between laboratories; the results are being analysed.

4.53 The work of the WHO Collaborating Centres for Reference and Research on Arboviruses, Chlamydiae and Rickettsiae was reviewed in April when their respective directors met in Geneva. They considered, *inter alia*, the steps that should be taken to assist national laboratories in the prompt diagnosis of yellow fever, dengue haemorrhagic fever and equine encephalitis by providing training and the necessary reagents. The generous gift from the Research Resources Branch, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, Md., USA, of immune reagents covering in 30 groups the 350 known arboviruses and arenaviruses will make it possible for each centre to have a complete set of reagents so that it will no longer be necessary to send strains that are new to an area to a core laboratory for identification. Reviewing the research needed, the directors considered that emphasis should be put on yellow fever, dengue haemorrhagic fever, Lassa fever and Korean haemorrhagic fever in order to find better control measures.

4.54 In collaboration with the Organization, an immunoglobulin has been prepared from plasma collected from Bolivian donors known to have high levels of protection against the Bolivian haemorrhagic fever virus. It will be used for protection of laboratory workers or persons exposed to the virus in the field.

Lassa fever

4.55 A small number of Lassa fever cases occurred in East Central State, Nigeria, in 1974. It is now established that the agent is an arenavirus and that, not only can the disease be transmitted from person to person, but man can also be infected directly or indirectly by *Mastomys natalensis*, a rodent widely found in tropical and subtropical Africa. The high

risk of contracting the disease that laboratory staff run has so far slowed down epidemiological studies. How such studies can be safely carried out and how hospitalized patients should be managed to avoid nosocomial infections were discussed at the above-mentioned meeting of directors of WHO collaborating centres. In May, the Organization convened a consultation at which not only these questions but also diagnosis, treatment, prevention, and the precautions necessary if Lassa fever patients have to be moved from one country to another were considered; a summary of the conclusions has been published.¹

Insect viruses

4.56 Because of the increasing resistance of insect pests to chemical insecticides, the industry concerned is developing the use of insect viruses as an alternative method of pest control. Although these viruses may be effective, their safety for man and non-target animals has still not been well assessed, as was pointed out in the Annual Report for 1973.² The Organization, therefore, together with the appropriate WHO collaborating centres, has begun the preparation of the antigens necessary for conducting serological surveys among populations which have been or may be exposed to heavy doses of insect viruses, in order to determine the degree of human and animal infection that these may cause.

Epidemic acute haemorrhagic conjunctivitis

4.57 The etiological agent of this new condition, which in recent years has caused very extensive outbreaks in many parts of the world,³ has now been identified. Through cooperative studies by a number of WHO collaborating centres and other virus laboratories, it has been shown to be a new type of enterovirus—enterovirus type 70;⁴ this is the first time that an enterovirus has been recorded as the causative agent of a pandemic of conjunctivitis. The Organization in 1974 provided advice on the laboratory diagnosis of this condition in connexion with an outbreak in Burma, the only country from which more than sporadic cases were reported during the year.

Trachoma

4.58 Notwithstanding the importance of trachoma and its complications as a cause of visual impairment and blindness and the fact that relatively simple and

¹ *Wkly epidem. Rec.*, 1974, 49, 341-343.

² *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 1.53. See also *Wld Hlth Org. techn. Rep. Ser.*, 1973, No. 531.

³ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 1.54.

⁴ Mirkovic, R. R. et al. (1973) *Bull. Wld Hlth Org.*, 49, 341-346.

inexpensive measures may give satisfactory results, shortage of locally available resources and the relatively low priority given to the control of trachoma are often serious obstacles to the adequate development of control measures. In view of this, WHO's main emphasis continues to be placed on the development of more rational and more effective control methods, on the best possible utilization of available resources, and on the integration of these activities into general health services whenever possible. The adoption of uniform diagnostic criteria and a more rational approach to the control of the disease in areas where it is endemic have been facilitated by the wide distribution of colour-slide sets and of the field guide issued in English in 1973¹ and now also available in French.

4.59 Direct WHO support continued to be given in 1974 to trachoma control programmes in Burma, the Libyan Arab Republic and the United Republic of Tanzania, and was started in Nigeria. Advisory services and supplies continued to be provided on an intercountry basis in the European Region (to Morocco and to Turkey) and an intercountry project was launched during the year in the Eastern Mediterranean Region. In the latter Region, evaluation of control activities showed a marked reduction in the severity of trachoma and in the prevalence of trachoma and conjunctivitis in treated areas in Iran, Iraq, Kuwait, Libyan Arab Republic, Sudan, and Syrian Arab Republic.

4.60 Newly developed methods for the laboratory diagnosis of trachoma now make it possible to add an objective and quantifiable parameter to the epidemiological assessment and to the evaluation of control measures. These methods were reviewed in detail at a WHO symposium on the laboratory diagnosis of trachoma held in London in July in collaboration with the Institute of Ophthalmology, University of London. This symposium was attended by scientists from the laboratories that have developed these techniques and from laboratories located in areas where trachoma is endemic. The participants prepared for publication a guide containing detailed laboratory diagnostic procedures, with emphasis on methods for use where laboratory facilities may be limited. Among methods recommended for wider use are the primary isolation of the agent in tissue culture and the microimmunofluorescence test for the detection of specific antibodies in circulating blood and in tears.²

¹ Tarizzo, M. L., ed. (1973) *Field methods for the control of trachoma*, Geneva, World Health Organization.

² Diagnostic procedures for chlamydial infections, including trachoma, are also considered in a review of the chlamydiae as agents of human and animal diseases published during the year: Schachter, J. et al. (1973) *Bull. Wld Hlth Org.*, **49**, 443-449.

4.61 Research activities sponsored by WHO continued to be aimed at the long-term development of better control. As an example, the recent identification of pathways for the synthesis of lipids by chlamydial cells different from those of bacterial and mammalian cells opens up interesting possibilities for the eventual development of specific inhibitors.

4.62 Other studies are continuing on the efficacy of long-acting antibiotic preparations. A comparative trial on the relative efficacy of different antibiotics was carried out during the year in the field in Burma in close collaboration with national personnel. The evaluation of the results of this and of a similar earlier trial in the Syrian Arab Republic is in progress.

Rickettsial diseases

4.63 Louse-borne typhus continued to be a significant cause of morbidity and mortality in the highlands of Eastern and Central Africa, and sporadic cases were again reported from some areas in the Americas (Ecuador and Peru).

4.64 The assistance so far provided to the Governments of Burundi, Lesotho and Rwanda in connexion with epidemic outbreaks of louse-borne typhus is now gradually evolving into more basic and more rational measures for control of the disease, notwithstanding serious constraints and operational difficulties, and assistance from international development bodies is being sought. Long-acting antibiotics (doxycycline and minocycline) now make single-dose treatment of the disease possible, but its control continues to be based on the simultaneous application of treatment, delousing, vaccination and health education measures.

4.65 The results of a WHO-sponsored laboratory study on the properties of the attenuated E strain of *Rickettsia prowazeki* have been published,³ and an acceptability and safety trial of attenuated E strain vaccine was completed in Bolivia during the year. On the basis of these results and in the light of discussions at the April meeting of directors of the collaborating centres referred to in paragraph 4.53, it is now possible to consider undertaking a field trial to compare the efficacy of attenuated E vaccine with that of inactivated vaccine. Another paper published during the year summarizes present knowledge on the various rickettsiae and rickettsial diseases, and on their epidemiological characteristics, control and public health significance.⁴

³ Kazár, J. et al. (1973) *Bull. Wld Hlth Org.*, **49**, 257-265.

⁴ Brezina, R. et al. (1973) *Bull. Wld Hlth Org.*, **49**, 433-442.

Venereal diseases and endemic treponematoses

Venereal diseases

4.66 There was no improvement during the year so far as syphilis and gonorrhoea in the world are concerned. In spite of the effectiveness of adequate antibiotic therapy the incidence of gonorrhoea continued to increase, the high rates notified in some European and American countries being exceeded by the rates in a number of African and Asian countries. In a number of sampling surveys, too, it has been shown that a prevalence of 2-10% is not uncommon in some of the younger age-groups. In most countries 60-80% of cases are dealt with by private practitioners who, according to a Franco-Swedish pilot study, notify only one in every 6-10 cases; most of these cases are in the age-group 18-24 years. In the majority of countries syphilis is 10-50% less frequent than gonorrhoea and its prevalence shows little change from year to year.

4.67 Of the less frequently encountered venereal diseases, lymphogranuloma venereum is found in the Caribbean area, South America, West Africa, and elsewhere, especially in ports of the tropics. Granuloma inguinale is not common in tropical Africa, rather more prevalent in South-East Asia, prevalent in south India, and highly prevalent in Papua New Guinea. Relatively few countries notify sexually transmitted diseases other than those mentioned, but those that do report an upward trend in their prevalence, particularly for non-gonococcal urethritis, which in some areas appears to be more prevalent than gonorrhoea.

4.68 That the incidence and prevalence of the sexually transmitted diseases have increased throughout the world to the extent that in several countries they are regarded as being out of control has its paradoxical aspects. Why should these diseases go on increasing in the presence of effective treatment, reliable and sensitive bacteriological or serological diagnostic methods, and a sound knowledge of their epidemiology? The reasons are many—a more permissive society, changes in behaviour, urbanization, tourism, and the migration of workers, all of which help to mix populations and remove them from their traditional psychological backgrounds. The continuing evaluation of gonococcal resistance being carried out by the WHO Collaborating Centre for Reference and Research in Gonococci, Neisseria Department, Statens Serum Institut, Copenhagen, has at the same time shown increased resistance by the gonococcus to the antibiotics, particularly penicillin. The frequent use of inadequate doses in treatment or the use of small

doses for other conditions favours the selection of resistant strains. On the other hand, WHO drug regimens employing suitable dosages have, for instance, reduced gonococcal resistance in Greenland and obtained a cure in 90-95% of cases in Senegal. But medical treatment will not by itself suffice to bring about an appreciable and lasting reduction in the prevalence of the sexually transmissible diseases.

4.69 A meeting held in Geneva in November on health education in the control of sexually transmitted diseases, which brought together some 50 participants representing a wide variety of disciplines, stressed the consequences for the individual and the community of the global increase both of gonorrhoea and syphilis and of other sexually transmitted diseases, whose seriousness is often not appreciated. The participants laid emphasis on the urgency of designing a better approach to the problem that takes into account not only medical considerations but also the psychosocial and behavioural aspects and that underlines the importance of education and health information, which must necessarily accompany and lend force to all medical action. This approach must be integrated into health education programmes concerned with the control of communicable diseases and must form part of sexual and family-life education. Its aims should be to bring about new attitudes to the sexually transmitted diseases, in particular as regards prevention and case detection among the general public as well as among the young, especially those in groups at high risk. This approach should be multidisciplinary, involving health education specialists, social scientists, experts in the mass communications media, physicians, youth experts, teachers, etc. Very often it will necessitate appropriate education of the educators and improvement in medical teaching programmes as well as the strengthening of treatment facilities and ensuring correct treatment and thorough contact tracing.

Endemic treponematoses

4.70 The epidemiological surveillance teams that WHO has maintained since 1960¹ have continued to assist countries in following up mass treatment campaigns against the endemic treponematoses. In the past few years they have examined and treated 47 million people in 45 countries. The good effects of these mass campaigns and of the strict surveillance carried out afterwards may be gauged from the fact that clinical prevalence rates in most of the affected areas have fallen from 6-10% to less than 1%. Nevertheless, foci of infection still persist, and governments continue to request WHO assistance through the epidemiological

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 1.64.

surveillance teams, which apply evaluation methods based on random sampling of the population and clinical examination of selected individuals, coupled with serological examinations to detect subclinical infection and assess the extent to which transmission persists, especially among children. Such a team worked in 1974 in Senegal.

4.71 The achievements of the epidemiological surveillance teams may be viewed from three aspects. From the epidemiological aspect, they have shown that there continues to be a low rate of transmission of endemic treponematoses among nomad populations and in areas where the health infrastructure is inadequate and where mass treatment campaigns have not covered virtually the whole of the population. For such areas and populations further efforts are needed to prevent outbreaks from starting in residual foci. From the methodological point of view, the teams have shown that the approach is feasible, the measures taken are effective, and the results obtained by serological surveys combined with clinical examination are reliable. From the point of view of public health, they have defined the areas of the residual foci and the methods of combating them, and they have also aided in the assessment of the prevalence of other bacterial, viral or parasitic diseases of little-known distribution.

4.72 While the prevalence of the endemic treponematoses is declining, syphilis is now being found in many urban and rural areas in developing countries where it did not previously occur, according to WHO-sponsored studies in Chad, Papua New Guinea and Thailand carried out in 1973 and 1974. This creates a fresh problem, since there is a danger that the new generation, no longer protected by the cross immunity between the endemic treponematoses and venereal syphilis, will become the prey of this sexually transmitted disease, which has a much worse long-term prognosis.

Research

4.73 *Gonorrhoea*. WHO research in gonorrhoea has the following aims: (1) to standardize bacteriological and serological diagnostic methods, making them more sensitive and more reliable; (2) to study the structural and antigenic components and the different biotypes of gonococci; (3) to increase knowledge of host-agent relationships; (4) to monitor changes in the sensitivity of the gonococcus to therapeutic agents; and (5) to evaluate and standardize treatment regimens. While, as the WHO Collaborating Centre for Reference and Research in Gonococci, Copenhagen, has shown, bacteriological diagnosis is relatively easy on the basis of multiple smears and strict culturing, it is not if a

smear is examined directly; with this method almost 20% of cases prove negative. However, a WHO-supported study at the Venereal Diseases Reference Laboratory of the London Hospital Research Laboratories and at the Central County Hospital, Örebro, Sweden, showed that direct immunofluorescent methods with specific sera greatly improve the diagnosis in these cases.

4.74 Gonorrhoea is asymptomatic in 60-80% of women and 10-20% of men. Because it is nevertheless infectious and liable to give rise to complications, its detection is of the greatest epidemiological importance. Bacteriological diagnosis of the disease often requires a number of successive examinations. WHO-supported research on serological methods has therefore been carried out by the Central Institute for Scientific Research on Skin and Venereal Diseases, Moscow, and the Central County Hospital, Örebro, and the latter showed that by such methods 95% of cases of disseminated gonorrhoea, 80% of cases of gonococcal salpingitis, but only 20-40% of cases of uncomplicated gonococcal urethritis were detectable. The study of the specificity and sensitivity of serological methods requires the isolation and biochemical and antigenic identification of the constituents of *Neisseria*, as has been shown in supported studies at the Central Institute for Scientific Research on Skin and Venereal Diseases, Moscow; the *Neisseria* Research Centre, Marseilles, France; Southampton University, United Kingdom; and the Department of Microbiology, Rockefeller University, New York, USA. The procedure,¹ using an antigen isolated from the pili of gonococci, is being subjected to routine testing by the Middlesex Hospital, London, and the University Hospital, Uppsala, Sweden.

4.75 Other WHO-supported studies during the year included one on the pathogenic mechanisms of the gonococcus, particularly its adherence to the mucous membranes and its survival inside leucocytes, carried out at St Mary's Hospital, London. An important monitoring study by the WHO Collaborating Centre for Reference and Research in Gonococci, Copenhagen, determined the sensitivity of 6202 strains from several countries, thus providing guidance on effective treatment. At the Urethritis Centre, Hôpital Saint Louis, Paris, a comparative study was made on 20 000 cases of gonorrhoea of a number of treatment regimens involving a single dose of different antibiotics, given either orally or by injection; it was shown that 90-97% of patients could be cured definitively when an appropriate dosage was used. Similar regimens were applied in the African and other Regions with equal success.

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 1.81.

4.76 *Treponematoses*. Comparative studies, coordinated by the Center for Disease Control, Atlanta, Ga., USA, were carried out on the standardization and validity of serological diagnoses of the treponematoses; collaborating centres were the WHO International Reference Centre for Endemic Treponematoses, Institut Alfred-Fournier, Paris, for the TPHA and FTA tests and the WHO Collaborating Centre for Reference and Research in Treponematoses, Statens SerumInstitut, Copenhagen. The various centres obtained results showing good correlation.

4.77 Research was carried out on the reasons for the lack of specificity of certain tests such as the FTA and the TPHA, which give false positive results in the presence of autoimmune diseases or of natural antibodies. The nature of the antibodies or antibody complexes involved is still under study at the Institut Pasteur, Paris, the Departmental Dermato-Venereological Polyclinic, Bialystok, Poland, the Department of Pathology, Singapore Hospital, the Public Health Laboratory, Faculty of Medicine, Lyons, France, and St Thomas's Hospital, London.

4.78 The Institut Pasteur, Paris, standardized an ether cardioliipin that is more stable than the natural cardioliipins used in serological reactions.

4.79 Detailed studies supported by WHO were made of the immunology of the treponematoses and the cellular and humoral bases of immunity to them at the Ludwik Hirszfeld Institute of Immunology and Experimental Therapy, Wroclaw, Poland, the Statens SerumInstitut, Copenhagen, the Central Institute for Scientific Research on Skin and Venereal Diseases, Moscow, St Thomas's Hospital, London, the Baylor College of Medicine, Houston, USA, and the University of California at Los Angeles, USA. The passive transfer of humoral antibodies, while modifying the sequence of appearance of antibodies and lesions after the inoculation of treponemes, does not prevent infection from taking place. A more promising approach is to seek immunity through cellular antibodies; proof of the specificity of lymphocytes or T-cells has been given by a study of skin tests, the blast transformation of lymphocytes, or the changes caused by immunodepressive drugs in these reactions. The University of California at Los Angeles has investigated the use of irradiated treponemes in sublethal doses as immunizing agents; repeated injections of such treponemes induce some resistance to infection by pathogenic treponemes. A study in progress at the Johns Hopkins University School of Medicine, Baltimore, Md., USA, of the antigenic constituents of the outer membrane or filaments may perhaps afford

hope for specific protection. The possibility of cross immunization may be brought nearer by the search for different biotypes of pathogenic and nonpathogenic treponemes and the study of their structural and antigenic differentiation.

4.80 The sensitivity of treponemes to penicillin persists, and it does not appear to be altered in infected animals kept for long periods on sublethal doses of antibiotics. It has nevertheless been shown by experiment at the WHO Collaborating Centre for Reference and Research on Endemic Treponematoses, Institut Alfred-Fournier, Paris, that quiescent forms of treponeme persisting in lymph nodes are not affected by even massive doses of penicillin and may when it is discontinued cause relapses.

Tuberculosis

4.81 Almost all newly diagnosed tuberculosis patients can be cured by modern chemotherapy if one of the known effective regimens is applied for an adequate period and if the drugs are taken regularly. Controlled clinical trials have also proved that tuberculosis is preventable. In other words, as the WHO Expert Committee on Tuberculosis emphasized in its ninth report,¹ tuberculosis has become a controllable disease. However, the Expert Committee also reiterated that the control of tuberculosis, because a long-term effort is required and control measures need to be provided for the entire community, is most rationally achieved if the programme is carried out as part of the general health services. Thus the scope and intensity of any tuberculosis control programme are largely dependent on the adequacy and efficiency of the health care delivery system as a whole, including the non-governmental component of voluntary and community development workers.

4.82 In spite of the often fragile structure of the health services in developing countries, especially in rural areas, more and more countries are making efforts—though at first sometimes modest—to provide services that, whilst being economical, are more meaningful in respect of tuberculosis control. Some have recorded substantial achievements, if not by the establishment of fully-fledged tuberculosis programmes, at least in starting to apply the basic principles underlying them. The number of countries providing combined immunization against tuberculosis and smallpox has further increased. The outputs of the BCG vaccination programmes in general are reported to have increased substantially where the direct vaccination approach is

¹ *Wld Hlth Org. techn. Rep. Ser.*, 1974, No. 552.

adopted. As a result, the coverage of eligible population groups has improved considerably. For example, in 18 Latin American countries where a total of 122 million BCG vaccinations were given during a 12-month period, four countries reported reaching a coverage of 75% or more of their child population between 0 and 14 years of age. Seven countries achieved coverages of the order of 50-74%. The survey in Latin America also showed the extent to which the preventive, diagnostic and curative programme components were delivered through the general health services by nonspecialized personnel. Undertaken at regular intervals, such evaluations will provide valuable information on the stage and trend of programme development in the Region of the Americas for tuberculosis control.

4.83 In other Regions also, the Organization continued to give assistance in programme evaluation and the collection of epidemiological data for surveillance purposes, the regional teams providing technical advice in the Western Pacific and South-East Asia Regions. On the basis of epidemiological survey data or the analysis of input and output figures, or both, current programme policies and the methods and techniques used in tuberculosis control were critically reviewed in a number of countries, among them Indonesia, the Republic of Korea, and, in the African Region, Upper Volta. The potential capacity of the existing health services, including the psychological and educational readiness of the health personnel, to absorb tuberculosis control programme activities was taken into consideration. The systems analysis approach is now being applied to investigate operational methods not only for tuberculosis control but also for leprosy and tuberculosis control activities combined in joint programmes, for example in Burma and Upper Volta (see also paragraph 4.98). The possibility of including schemes for the control of other communicable diseases, especially if they have similar requirements, such as protracted or long-term treatment, is being considered.

4.84 Members of the regional tuberculosis teams have taken part in training activities in the South-East Asia and Western Pacific Regions for the different categories of personnel engaged in national tuberculosis programmes; these activities are shown in Table 2.

4.85 In October 1974 the Organization published an evaluation¹ of the impact on tuberculosis programmes throughout the world of the recommendations made by WHO expert committees and study groups on tuberculosis since 1947. The evaluation describes how

these recommendations facilitated mass BCG vaccination, made case-finding more effective, shifted emphasis from institutional to domiciliary treatment, and changed the fundamental concept of control of the disease.

4.86 A special effort was made in 1974 to increase the impact of the recommendations by expanding the dissemination of current scientific and technical knowledge on tuberculosis control. The ninth report of the WHO Expert Committee on Tuberculosis, and particularly the Committee's recommendations, were presented and discussed at the meetings, training courses, seminars and conferences organized or assisted by the Organization in the African, South-East Asia, Eastern Mediterranean and Western Pacific Regions. To ensure that the report reaches as many as possible of those who are faced with the practical problems of tuberculosis control at central, intermediate and peripheral level, as well as those responsible for the teaching of medical and auxiliary personnel, special mailing lists going well beyond the usual distribution for the WHO Technical Report Series were prepared.

4.87 In implementation of the recommendations of the Expert Committee, which drew attention to the fundamental importance of the bacteriological diagnosis of tuberculosis for clinical, epidemiological and public health purposes, it has been decided to request Member States, as from 1975, to report bacteriologically confirmed cases separately from those diagnosed on clinical grounds only. The WHO Expert Committee on Health Statistics, meeting in June, agreed that the bacteriological confirmation factor could be introduced for tuberculosis, though at the subclassification (fifth-digit) level only, in the ninth revision of the International Classification of Diseases.

4.88 In May 1974, the Twenty-seventh World Health Assembly urged "Member countries importing BCG vaccine on a bilateral basis to make use of the international quality control system set up by the Organization" and recommended "that Member countries producing BCG vaccine avail themselves of the international system of assaying the quality of BCG vaccines until they have established a competent national control service" (resolution WHA27.54). This resolution was the outcome of 10 years of research and development work, by WHO and collaborating laboratories, aimed at setting up an effective and workable system for the quality control of internationally supplied dried BCG vaccine. Experience has shown that a good freeze-dried BCG vaccine can be produced at reasonable cost only if the quantity made is sufficient to cover the estimated needs of a population of at least 50 million people. In recent years it has been

¹ WHO Chronicle, 1974, 28, 444-451.

possible to meet the demand from WHO/UNICEF-assisted national programmes with vaccines produced in a few laboratories recommended by WHO, the quality being assayed on a routine basis. To ensure that BCG vaccine of good quality is available in each Region, efforts are being made to expand production capacity and improve quality in some countries that have a large home market or the potential for producing BCG vaccine for a number of neighbouring smaller countries. During the year, assistance has been provided by the training in Denmark of key staff of the BCG laboratories in Chile, India, Indonesia, Iran, Poland and Romania.

Research

4.89 During the year, 43 research institutions received WHO assistance and cooperated with WHO in various aspects of tuberculosis control. The extent of these activities, stimulated and coordinated by the Organization, is reflected in the fact that 62 scientific papers deriving from them were published in major medical periodicals. The tuberculosis research programme as a whole was reviewed by the WHO Advisory Committee on Medical Research in June.

4.90 In the WHO-assisted tuberculosis prevention trial in South India, after 2½ years of selective and passive case-finding,¹ the entire trial population aged 5 years and over was re-examined by chest X-ray, and all persons with pulmonary shadows were examined bacteriologically. The results of postvaccination tuberculin tests are being analysed. Valuable epidemiological information on the development of tuberculosis infections and disease is being obtained. One finding of direct relevance to the trial is that, although the risk of tuberculosis infection in the trial area does not seem to diminish and the number of patients with bacteriologically confirmed tuberculosis in the study population is considerable, the number of new cases among persons who were tuberculin-negative and had a normal X-ray picture at intake remains small. Thus it will be some years before a meaningful analysis of the protective effect of BCG vaccination can be made from the data of this trial.

4.91 In a number of WHO field trials with school-children, the bifurcated needle technique for BCG vaccination has appeared less effective than intradermal injection. Because of the possible operational advantages of the former technique, however, further development work is being undertaken. In the first place this is directed towards the production, at a reasonable price, of a concentrated vaccine with a

high survival rate after freeze-drying. The bifurcated needle technique is being investigated in Chile in newborn children and young infants, for whom it may be particularly suitable, since in the lowest age-group intradermal injection is difficult and a reduced dose of vaccine is recommended to obviate side-effects. In Afghanistan and Brazil, the effectiveness and operational aspects of simultaneous BCG and smallpox vaccination are being studied in large-scale field trials.

4.92 Controlled clinical trials continued with WHO assistance at the Madras Tuberculosis Chemotherapy Centre, India, the WHO Collaborating Centre for Tuberculosis Chemotherapy, Prague, and the National Research Institute for Tuberculosis, Łódź, Poland.² The main objective of these studies is to evaluate the effectiveness, efficiency and acceptability of the present intermittent drug regimens for both newly diagnosed tuberculosis patients and chronic patients, in terms of bacteriological quiescence after 12 months of treatment and the stability of the cure during subsequent years. The assumption that it should be possible with regimens containing rifampicin to shorten the duration of treatment to 6 months has proved correct, but the toxicity of these regimens and the stability of their therapeutic success require further study. The results obtained so far are potentially of great operational importance, although cost is the decisive factor in the choice of standard regimens for widespread use, even in affluent countries. New trials are under way of the therapeutic implications of shortening the duration of treatment with expensive drugs and of changing the rhythm of their ingestion; both measures may considerably alter the economics of short-course chemotherapy with regimens that contain rifampicin and ethambutol.

4.93 With the advances made in recent years, immunological methods and techniques may be expected to contribute to the management of tuberculosis, in respect of both diagnosis and prognosis. WHO stimulated research collaboration between two centres in Prague—the Second Tuberculosis Clinic, Charles University, and the Department of Medical Microbiology at the Tuberculosis and Respiratory Diseases Research Institute—with the aim of investigating the patterns of the humoral and the cell-mediated immune systems in bacteriologically confirmed cases of tuberculosis before, during, and after chemotherapy.

4.94 WHO continued its support for operational research projects in Algeria, Japan, Romania, and Venezuela. The possibility of including the delivery

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 1.101.

² *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraphs 1.104-1.106.

of leprosy control services in the Venezuelan project is being investigated.

Leprosy

4.95 In its resolution WHA27.58 on the coordination and strengthening of leprosy control, the Twenty-seventh World Health Assembly recalled in May that leprosy is still a widespread and serious disease and recommended that Member States examine the possibility of strengthening control measures by calling upon all available sources of cooperation.

4.96 In 1974 the Organization continued its technical support for a number of leprosy control programmes, the majority of them assisted by UNICEF. As in the past, the WHO Special Account for the Leprosy Programme received valuable contributions for the support of national antileprosy programmes or special research projects from various agencies, including the Order of Malta (Comité international de l'Ordre de Malte pour l'Assistance aux Lépreux), Les Amis du Père Damien (Belgium), the Danish Save the Children Organization, the Association française des Fondations Follereau, the German Leprosy Relief Association (Federal Republic of Germany), the Italian association Amici dei Lebbrosi, the Lepers' Trust Board Inc. (New Zealand), and Emmaüs-Switzerland.

4.97 In the African Region, at the request of governments, WHO-assisted evaluations were carried out in Botswana, Central African Republic, Chad and Upper Volta. The results have shown that it is possible to reduce the prevalence of leprosy substantially in these countries, provided that a serious and sustained effort is maintained over a sufficiently long period. These evaluations as a whole have confirmed that the use of extremely simple measures and methods is compatible with a reduction in leprosy prevalence, although the incidence of the disease may remain unaffected. As part of programmes to improve case detection and the delivery of treatment in the Region of the Americas, auxiliary workers are successfully carrying out these activities in Paraguay and Venezuela. Other countries, including Brazil, have shown their interest in adopting similar methods. In the South-East Asia Region, WHO continued its assistance to control programmes in Bangladesh, Burma, Indonesia, Maldives and Nepal. In three districts in Burma, the integration of the leprosy programme with other specialized programmes is proceeding satisfactorily. In the Eastern Mediterranean Region, steps were taken in countries where leprosy constitutes a public health problem, particularly Sudan, for training national personnel required for fulltime leprosy control; and

Iraq and Oman were assisted in a preliminary assessment of the health problem. WHO provided advisory services to Ethiopia to assist the All-Africa Leprosy and Rehabilitation Training Centre (ALERT) to review its training programme and to provide guidance to those responsible for training. In the Western Pacific Region, the Organization continued to assist the New Hebrides and provided advisory services to Laos, the Republic of Korea, and the Republic of Viet-Nam; the prevalence of leprosy seems to be on the increase in the last-mentioned country.

4.98 A special effort was made in 1974 to achieve a realistic reorientation of WHO's approach to the leprosy problem in the two major fields of control and research. This process is based on an interchange of results obtained in operational, epidemiological and other research, as well as on experience gained in the field. In the sphere of disease control, a report has been completed that is designed, within the framework of general health services, to give guidelines for optimal leprosy control activities, set standards for the different categories of field personnel concerned, and provide a basis for the simplified and economical implementation of leprosy control programmes. With the object of rendering leprosy control activities more effective, plans have been made which should permit the joint development of leprosy and tuberculosis control programmes. The plans are a first step towards the realization of combined programmes incorporating leprosy control in a general communicable disease control programme. A specific programme with joint leprosy and tuberculosis activities began in November in Upper Volta, and the possibility of combining leprosy control activities with the tuberculosis project in Venezuela is being studied (see also paragraph 4.94).

Research

4.99 In 1974, WHO cooperated in 51 research programmes carried out in 44 institutes in 25 countries, 14 of them developing ones where leprosy is a public health problem. The projects, which are coordinated by WHO, have been selected to investigate fields in leprosy research that seem most likely, in the foreseeable future, to yield practical results applicable to control.

4.100 The National Institute of Dermatology, Caracas, a WHO Collaborating Centre, was able to reconfirm successful multiplication of *Mycobacterium leprae* in the armadillo, first reported in 1972.¹ At the Depart-

¹ *Off. Rec. Wld Hlth Org.*, 1973, No. 205, paragraph 1.151.

ment of Biochemistry, Gulf South Research Institute, New Iberia, La., USA, also a WHO Collaborating Centre, about 40 armadillos with advanced disseminated disease were necropsied. These yielded nearly 3 kg of lepromas containing 10^{10} – 10^{12} bacilli per gram. One specimen yielded as much as 7.5 mg dry weight of bacilli per gram of tissue. Large yields of bacilli were also obtained at the Laboratory Research Branch, Public Health Service Hospital, Carville, La., another WHO Collaborating Centre. The availability of leprosy bacilli in numbers never obtained before made it possible to design new investigations, to be co-ordinated by WHO and with the expected participation of 39 research institutions in 12 countries. The most important of these investigations forms a special research programme on the immunology of leprosy, plans for which were developed at a meeting in November. The main objectives of the studies are to elucidate the biochemistry and antigens of the leprosy bacillus and to develop new methods of surveillance, immunoprophylaxis and therapy. Financial support for this work has been obtained from the Norwegian Agency for International Development (NORAD). In cooperation with WHO the Laboratory Research Branch at Carville is developing a lepromin-like preparation derived from armadillo tissue infected with *Myco. leprae*. Preliminary tests of the preparation in 1974 at three centres in Burma, Ethiopia and Malawi indicate, subject to confirmation by extended trials, that it might serve to replace lepromin, which requires human tissue for its preparation and is becoming increasingly difficult to obtain.

4.101 In WHO-assisted studies on the nose in leprosy, conducted by the National Institute for Medical Research, London, in its capacity as a WHO Collaborating Centre, it was found that large amounts of *Myco. leprae* are disseminated through nasal secretions in the early stages of lepromatous leprosy, but probably not in borderline patients. It was also demonstrated that, at variance with an earlier report¹ of its short life-span outside the human body, the leprosy bacillus can survive drying for several days in nasal secretions. These studies underline the importance of nasal secretions as the source and path of dissemination of *Myco. leprae*. To clarify the route of infection, immunosuppressed mice were exposed to aerosols containing *Myco. leprae*. Preliminary results showed that about 30% of sacrificed animals were infected with *Myco. leprae* through the respiratory route. These findings support the hypothesis of a possible transmission of leprosy analogous to that of tuberculosis, but do not rule out other mechanisms of infection.

4.102 In recognition of the importance of environmental factors, which may play a decisive role in the natural development of the disease, WHO prepared a study on risk factors in leprosy. The study was an attempt to relate to leprosy the concept of "risk" and "risk factors", which has proved fruitful in other diseases. It is evident that prospective incidence studies on a large number of people are needed to define and quantify any potential "risk factors".

4.103 Recent research has improved understanding of the immunological process involved in leprosy infection. At the Tata Department of Plastic Surgery, Bombay, India, subjects not affected with leprosy were shown to have 70% T lymphocytes and 30% B lymphocytes, whilst in lepromatous cases these proportions were reversed. The T cells are responsible for cell-mediated immunity. At the All India Institute of Medical Sciences, New Delhi, a low rate of T lymphocytes has been observed in lepromatous patients, followed by an increase of these cells during treatment. At the Institute of Leprology, Rio de Janeiro, Brazil, the action of thalidomide on lymphocytes was investigated, and it was found that the number of T cells diminishes significantly under the influence of thalidomide in lepromatous patients. This finding could throw new light on the mechanisms of action of thalidomide in suppressing symptoms in reactional leprosy. With the agreement of the authorities, Burma is providing a regular supply of lepromatous tissue to several WHO collaborating centres for lepromin standardization. It was mentioned in the Annual Report for 1973² that, with a view to developing a specific vaccine against *Myco. leprae*, the Cantacuzino Institute, Bucharest, was attempting the genetic transformation of BCG strains with heterologous DNA. Progress has been made in 1974 and a related mycobacterium is reported to have been genetically transformed by this means.

4.104 In the domain of chemotherapeutic and chemoprophylactic trials, collaborative studies are continuing at centres in India, Mali, Philippines, Senegal, Somalia and Venezuela. The Central Leprosy Teaching and Research Institute, Chingleput, India, reported interesting observations on the long-term and favourable suppressive action of clofazimine, as compared to the short duration of the effect of thalidomide, in erythema nodosum leprosum and other reactional forms of leprosy.

4.105 In the large-scale WHO leprosy investigation in Burma,³ in which the main aim has been to assess

¹ Off. Rec. Wld Hlth Org., 1974, No. 213, paragraph 1.125.

² Off. Rec. Wld Hlth Org., 1974, No. 213, paragraph 1.133.

³ Off. Rec. Wld Hlth Org., 1974, No. 213, paragraph 1.132.

the value of BCG for preventing leprosy, 336 new cases were detected between March 1973 and June 1974, bringing the number of children with leprosy up to 946 of the 28 582 children included in the trial, who are equally divided into BCG and control groups. The overall protective effect of BCG has been about 18%. Also during 1974, the first children in the trial with lepromatous (L) and borderline (B) characteristics were clinically diagnosed, and their condition confirmed histopathologically. So far, there are two cases with B or L patterns in the vaccinated and four in the control group. The evidence points to a long incubation period for these "open" forms of leprosy. It has now become clear that the possible protective effect of BCG against the infectious forms of leprosy can only be assessed by a prolonged follow-up.

4.106 Mass *in vitro* cultivation of the organism seems to be a necessary step for final and decisive progress in the control of leprosy. It is a tantalizing trick of history that the first bacillus ever observed in diseased human tissue should still be uncultivable *in vitro*. Pattyn,¹ at the request of WHO, analysed the problem of cultivation of *Myco. leprae*. He demonstrated the lacunae in knowledge of the human leprosy bacillus and emphasized the need for a better understanding of its biochemistry. WHO assistance to 12 centres attempting *in vitro* cultivation of *Myco. leprae* by different methods is being reoriented towards research on the biochemical requirements of the bacillus.

4.107 Several centres are investigating the nutritional requirements of *Myco. leprae* and at WHO's suggestion an increasing number of investigators are using the relatively simple dopa-oxidation test² for identification of the organism. Studies in progress at the Leprosy Research Institute, Astrakhan, USSR, have provided information on the cellular environment of *Myco. leprae*, showing particularly that lactate-dehydrogenase activity is lower in all stages of lepromatous leprosy than in tuberculoid cases. These findings may be related to a specific metabolic activity of the leprosy bacillus. At the Leonard Wood Memorial Laboratory for Leprosy Research, Johns Hopkins University, Baltimore, Md., USA, where *Myco. lepraemurium* has been used as a model, successful microcultivation was reported in 1974 in the cell-free medium (NC-5) of Nakamura.³ The Department of Leprosy, Central Institute of Dermatology and Venereology, Moscow, succeeded in gradually reducing the incubation period in mice inoculated with a strain of *Myco. leprae* from the initial 10-16 months to 3 months. If this result can

be confirmed, it may prove to be of great value, as a cheap source of *Myco. leprae* would be readily available.

4.108 In many research protocols it would clearly be useful to follow a classification of cases in which the clinical lesions and their histopathology are related to the different cell-mediated immune levels. The WHO Collaborating Centre for Reference and Research on Histological Identification and Classification of Leprosy, Caracas, in collaboration with 10 other centres, is testing existing schemes to prepare the ground for a modern standardized and histopathologically revised classification.

4.109 The operational research on the feasibility of integrating specialized programmes into the general health service continued in Kyaukse district, Burma.⁴ This project, which related to both leprosy and tuberculosis in 1974, is expected to extend to other communicable diseases as well. In addition, the WHO Collaborating Centre for Epidemiology of Leprosy, Brussels, is developing an optimum data collection system for integrated leprosy control schemes; 29 Member States have already supplied sets of the recording and reporting forms they use at present.

Bacterial diseases

Cholera

4.110 In 1974 the cholera pandemic extended into four additional countries or territories: three in Africa and one in Oceania. The following tabulation shows the numbers of countries or territories notifying the occurrence of cholera to the Organization, and the number of cases they reported, during the past five years; the figures should be read with caution, however, for it is known that not all countries report the disease or all cases of it:

	1970 ^a	1971 ^a	1972 ^a	1973 ^a	1974 ^b
No. of countries or areas reporting cholera ^c . .	36	36	34	31	36
No. of cases reported . .	45 011	155 555	75 573	109 555	75 000

^a Data from *World Health Statistics Reports*.

^b Provisional figures at 27 December 1974.

^c Excluding those reporting imported cases only.

4.111 In Africa, 19 countries or territories reported about 7300 cases. The wave of spread that began at the end of 1973 in southeastern Africa extended to South Africa and the United Republic of Tanzania.

¹ Pattyn, S.R. (1973) *Bull. Wld Hlth Org.*, **49**, 403-410.

² Prabhakaran, K. (1973) *Int. J. Leprosy*, **41**, 121.

³ Nakamura, M. (1972) *J. gen. Microbiol.*, **73**, 193-5.

⁴ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 1.120.

In western Africa the disease was reported for the first time from the Cape Verde Islands. Recrudescences of cholera in some of the drought-affected Sahelian areas caused concern. In North Africa, Algeria was affected once again, the responsible organism being the Ogawa serotype of the El Tor strain as in previous years. In Asia, 113 countries reported about 65 000 cases, the majority of which occurred in Indonesia and India. In Sri Lanka the infection spread to almost all parts of the island. In Bangladesh the disastrous flooding and associated food scarcity and malnutrition created a situation leading to an enormous increase in acute diarrhoeal diseases, including cholera. A significant development was a small outbreak among Mecca pilgrims in December, which was effectively controlled.

4.112 The newly affected territory in Oceania was Guam, where a small outbreak with six cases was brought rapidly under control.

4.113 In Europe cholera appeared again in Portugal in May, at the beginning of the tourist season. In contrast to the localized outbreak of 1971, when the responsible organism was the Ogawa serotype, this epidemic was widespread and was caused by the Inaba serotype, which is prevalent in Angola and south-eastern Africa. The case fatality remained remarkably low, although there were more than 2000 cases.

4.114 There was a small number of importations of cholera from Portugal into France, the Federal Republic of Germany, Spain and the United Kingdom. Besides these, a few autochthonous cases occurred in France and Spain but were very quickly detected and controlled. One imported case, which appeared to have originated in Angola, was reported by Canada. The health authorities in Latin America and the Caribbean were alerted and given assistance in preparing to deal with any introduction of cholera across the Atlantic in view of the large volume of traffic from some of the cholera-affected countries in Africa and Europe.

4.115 As in previous years, the Organization gave assistance to countries through the interregional cholera team and other staff; ensured the production or provision of rehydration fluid, cholera vaccines, laboratory media, diagnostic sera, and antibiotics; and continued to help countries to build up their own trained manpower for cholera control. A number of the regional and interregional training courses or seminars held during the year, with emphasis on oral rehydration and on the treatment of all acute diarrhoeas including cholera, are listed in Table 2.

4.116 Members of the interregional cholera team and other WHO staff visited India, Indonesia, Italy, Malawi, Philippines, Portugal, Singapore, Spain, and Sri Lanka, to assist in emergency and other national programmes of cholera control. In addition to rendering assistance whenever required, the cholera team has been engaged in developing further the expanded programme for control of cholera and other diarrhoeal diseases (see paragraph 4.7).¹ As a part of this programme, guidelines are being prepared to assist national authorities in taking action suited to the local situation during emergencies as well as on a medium- and long-term basis.

4.117 Effective cholera treatment and control depend upon rapid diagnosis. To provide a firm basis for the establishment of the appropriate diagnostic services, WHO has published a brief volume entitled *Guidelines for the Laboratory Diagnosis of Cholera*.² This is a simply written booklet describing the organization of laboratory services for cholera, procedures suited to a local or peripheral laboratory, the characterization of strains at a central laboratory, and techniques for the detection of carriers. Common media and tests used for the isolation and identification of vibrios are also described.

4.118 *Research* in the field of cholera remains largely directed to the development of an improved immunizing agent. The surveillance phase of the controlled field trial of killed bivalent cholera vaccine with aluminium hydroxide as adjuvant, which began in May-June 1973 in Surabaya, Indonesia, has given encouraging preliminary results, as previously reported.³ However, further substantiation could not be obtained in the interepidemic period, and the trial is being continued through another "cholera season" as planned. In order to ensure the quality of the whole-cell cholera vaccines currently used by national administrations as well as those purchased by the Organization for use by Member States, one of the WHO Collaborating Centres for Bacterial Vaccines tested 21 batches from 8 countries; 14 were found to meet the requirements, and the remainder were not approved for use. In addition, the centre provided assistance to scientists seeking to develop an improved cholera vaccine.

4.119 A field trial of purified, glutaraldehyde-treated cholera toxoid containing protamine and aluminium phosphate has been undertaken by the US-Bangladesh

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 1.143.

² World Health Organization (1974) *Guidelines for the laboratory diagnosis of cholera*, Geneva.

³ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 1.144.

Cholera Research Laboratory, Dacca, in order to evaluate the role of antitoxic immunity in cholera. WHO is following this investigation closely, and is also supporting laboratory research in several countries for the development of a more potent toxoid. Laboratory studies on the structure of cholera toxin and natural toxoid are being stimulated and supported in order to elucidate the mechanisms of interactions of cholera toxin with the cell surface, as an understanding of this phenomenon may be helpful for developing a pharmacological compound to prevent or counteract the effect of cholera toxin on the intestinal secretory mechanism. As a crude toxoid containing both the toxin and somatic antigen in appropriate proportions may eventually prove to be a better immunizing agent, the Organization is assisting studies in Italy to develop techniques for the production of such a toxoid with a suitable adjuvant.

4.120 Research on gut-associated immunity in cholera for the development of an oral vaccine was pursued and a laboratory-attenuated mutant strain and a naturally apathogenic strain developed earlier in India were tested at the University of Maryland, Baltimore, USA. Both strains were found to be safe, even when given in large doses with sodium bicarbonate to counteract gastric acidity, but they failed to multiply in the gut and induced very little serum-antibody response; one afforded no demonstrable protection after challenge and so evaluation of the other was not attempted.

4.121 About 300 strains of so-called non-cholera vibrios or non-agglutinating vibrios isolated from cases of diarrhoea in different countries were examined according to a schema¹ developed for their serotyping, and it was shown that many antigenic types of these vibrios may cause diarrhoea in man. In collaboration with the National Institute of Health, Tokyo, a study is being made according to this schema of more strains suspected of being etiologically related to diarrhoea in different geographical areas in order to determine whether particular serotypes are more enteropathogenic in some areas than in others. In the same laboratory, sets of sera for the serotyping of *Vibrio parahaemolyticus* are being produced to assist national authorities in identifying their isolates.

Other bacterial enteric infections

4.122 The epidemiological situation created by plasmid-mediated multiple drug-resistance in *Salmonella typhi* and *Shigella dysenteriae* type 1 in different countries and by the increasing incidence of multiple drug-

resistance in enterobacteria in general is causing universal concern. In view of the need to collect information from national laboratories on the transmissible drug resistance factors in enterobacteria, the activities of the WHO Collaborating Centre in London, hitherto concerned mainly with enteric phage-typing, have been expanded to include work on the resistance of enterobacteria. It is developing, in concert with WHO, a practical programme for the international monitoring of drug resistance in enterobacteria and is proceeding with the standardization of methods by which to study this problem.

4.123 Research on cholera toxin has stimulated investigation of the mechanism of diarrhoea due to enteropathogenic *Escherichia coli*, and all the serotypes studied so far appear to produce an immunologically identical enterotoxin. This suggests the possibility of developing a single toxoid for preventing *E. coli* diarrhoea. This matter was considered at a consultation, in November, when means of improving laboratory studies of *E. coli* from cases of diarrhoea with a view to developing epidemiological surveillance methods were also proposed.

4.124 Controlled field trials with acetone-inactivated oral typhoid vaccines that began in 1973 in Chile and India² have been terminated. The preliminary findings indicate that the vaccine prepared by one laboratory in accordance with proposals made at a consultation in 1972³ gave only marginal protection. To elucidate the mechanism of vaccine-induced immunity against typhoid fever in order to improve the vaccines a laboratory study of cell-mediated immunity in animals given parenteral vaccine has been started in Lebanon in collaboration with the American University of Beirut.

Cerebrospinal meningitis

4.125 The incidence of cerebrospinal meningitis rose sharply in 1974 in many parts of the world, notably in Latin America, northern Asia and northern Europe, and in Africa the disease has shown a tendency to spread beyond the traditional "meningitis belt". Since this is not a generally notifiable disease, it is impossible to quantify the rise exactly, but it is known that *Neisseria meningitidis* serogroup A became generally more prevalent. As the resistance to sulfonamides of the prevalent strain has also been increasing, it is gratifying to note that an antimeningococcal vaccine against serogroups A and C is becoming available.

¹ Sakazaki, R. et al. (1970) *Jap. J. med. Sci. Biol.*, 23, 13-20.

² *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 1.149.

³ *Off. Rec. Wld Hlth Org.*, 1973, No. 205, paragraph 1.175.

4.126 The studies of polysaccharide group A vaccine progressed during the year. The field trials in Egypt¹ and Sudan² confirmed the effectiveness of this antigen in the prevention of clinical illness. The follow-up of the population immunized in 1972 and 1973 in Egypt has further indicated that the immunity lasts a relatively long time, probably more than three years. This vaccine was also used in rural areas of Sudan during the spring of 1974 to combat outbreaks as they occurred. Group A and group C polysaccharide vaccines are now being produced, and are licensed for use, in France, South Africa and the USA, and several other countries are beginning production. Vaccines of both serogroup A and serogroup C were used in a serious epidemic in Brazil in the second half of the year.

4.127 A collaborative international laboratory study of group A and group C polysaccharide vaccines was started with the participation of 12 laboratories in different countries, with the aim of developing better methods of characterization, potency testing and standardization. Research on vaccines in which the two meningococcal antigens are combined either with each other or with other antigens has also been initiated.

Plague

4.128 During the year some 2500 cases of plague and about 150 deaths were reported in respect of nine countries or territories—Madagascar, Southern Rhodesia, and Zaire in the African Region; Bolivia, Brazil, Peru and the USA in the Americas; Burma in South-East Asia; and the Republic of Viet-Nam in the Western Pacific Region. There were also unofficial reports of an outbreak in Namibia. The Organization provided technical assistance and reagents for studies of natural foci of plague in Bolivia, Brazil, Burma, Ecuador, Indonesia, Kenya, Lesotho, Peru, and Venezuela.

Streptococcal and staphylococcal infections

4.129 Twenty national laboratories are taking part in a project developed in 1973 by the Organization in cooperation with the WHO Collaborating Centre for Reference and Research on Streptococci, Prague, to improve and standardize the technique routinely used for streptococcus typing; the results so far show considerable interlaboratory variation.

Diphtheria, pertussis and tetanus

4.130 Developing countries continue to experience outbreaks of diphtheria with high fatality rates. The Organization has designated the Cantacuzino Institute, Bucharest, as a WHO Collaborating Centre for *Corynebacterium diphtheriae* in order to promote research on the identification of corynebacteria and the improvement of immunizing agents against diphtheria.

4.131 Pertussis rivals measles in importance and severity among young children in developing countries, particularly in Africa and Asia. There is no firm evidence on the case-fatality and mortality rates, but such information as is available to WHO suggests that the disease causes something of the order of 3 million deaths in the world every year. In December the Organization arranged an informal consultation to review the present knowledge of immunity and immunization in pertussis and the evidence concerning untoward reactions to the antigens currently in use. The preparation and testing of new pertussis vaccines that are not reactogenic and contain specific protective antigens are already under way at the WHO Collaborating Centre for Reference and Research on *Bordetella pertussis*, Moscow, as well as at a number of national laboratories.

4.132 With respect to tetanus, in addition to the collaborative project on the application of a simple laboratory test to detect antitoxin in wounded persons started in 1973,³ the Organization provided support for new research projects in several countries into the most effective routes and schedules of immunization for the prevention of the disease.

Veterinary public health (including Food hygiene and Comparative medicine)

4.133 There is increasing interest in the control of zoonoses and in the strengthening of food hygiene programmes, which have both public health and economic significance, and assistance was provided in this field to several countries, notably in the Americas; for instance, in the Bahamas the Organization assisted in the formulation of human and animal health programmes and particularly in preparing the establishment of a veterinary public health unit in the Ministry of Health, and in Paraguay it helped in planning and preparing a zoonoses control programme dealing principally with rabies, brucellosis and anthrax. The programme of direct assistance was supported by research on practical problems, group and individual training (see Table 2) and the provision of reference

¹ Wahdan, M. H. et al. (1973) *Bull. Wld Hlth Org.*, **48**, 667-673.

² Erwa, H. H. et al. (1973) *Bull. Wld Hlth Org.*, **49**, 301-305.

³ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 1.157.

reagents and services. Research on spontaneous animal diseases which are similar to or identical with those of man was continued and activities in laboratory animal medicine were stepped up.

4.134 A Joint FAO/WHO Expert Committee on Veterinary Public Health met in Geneva in November-December and listed the fields of public health and human medicine in which an input of veterinary science is required. This enabled the Committee to define the functions of public health veterinarians in such fields as the control of zoonoses, food hygiene, environmental health, comparative medicine and other related disciplines. The Committee discussed and made recommendations on the organization in government agencies of services to perform these functions and to train and educate personnel at all levels to man these services.

4.135 An interregional seminar on the organization of veterinary public health services—held in New Delhi in October—discussed the practical aspects of the foregoing subjects and the organization of such services in countries with limited resources, from which the participants were largely drawn.

Rabies

4.136 As part of the WHO/FAO-coordinated research programme on wildlife rabies in Europe, and to improve methods of wildlife rabies control, ecological studies were carried out by laboratories in Denmark, Federal Republic of Germany, Netherlands, Switzerland, and the United Kingdom. The annual "turn-over" of fox populations undisturbed by rabies and gassing operations has been found to follow a pattern that applies fairly generally in all the countries involved; this fact has been used as a basis for estimating the recovery rates of populations that have been reduced by the disease or by control measures. The tendency of reduced fox populations to return to their original density level or even exceed it may nullify the effect of control measures: populations reduced to one-fifth of their original density have been found to increase by 65% within one year.

4.137 Studies on the oral vaccination of foxes against rabies have not yet led to satisfactory results in that the virus strains attenuated for foxes show residual virulence for some other species of wild animals. The Institute of Veterinary Bacteriology and Microbiology, University of Berne, has incorporated non-infective indicators such as tetracycline or small plastic numbers in baits that might be used as vehicles for oral vaccine application. So far the results indicate that a number of baits are eaten by foxes within 24 hours, but that other carnivorous and omnivorous animals also pick them up.

4.138 The WHO Collaborating Centre for Reference and Research on Rabies at the Institute of Poliomyelitis and Viral Encephalitis, Moscow, has been examining the epidemiological trends of rabies in the USSR. During the past two years there has been a regular decrease in the number of human cases and in that of persons vaccinated against rabies. This is due partly to improved surveillance of rabies in animals and partly to the fact that indications for post-exposure treatment have been better defined and medical personnel have been trained accordingly. In the Soviet Union as a whole, the treatment rates fell from 19.3 to 5.8 per 10 000 inhabitants over the period 1954-70. Relatively high numbers of cases of human rabies are often related to severe epizootics of wildlife rabies, whereas the frequency of rabies cases recorded among dogs decreased steadily during the period indicated. Nevertheless, the dog, as transmitter of the disease from wildlife to man, remains the most important source of human infection.

4.139 Further studies on improved immunization methods against rabies in man have been conducted at the WHO Collaborating Centre for Reference and Research on Rabies Virus and Vaccines, in Philadelphia, Pa., USA. As previously reported,¹ the newly developed human diploid cell vaccine given in four doses spaced over 14 days produced in man much higher levels of neutralizing antibody than did conventional vaccines given daily for 14-21 days. There is now some evidence that two double doses of the vaccine given 10 days apart elicit an antibody response equivalent to that from the four single doses. This suggests that antigenic mass is more important than the timing of inoculations and that immunization schedules can be further simplified. The antigenicity of different preparations of this vaccine is being further investigated. In preliminary mouse-immunization testing no significant differences have yet been observed in the antibody response to three or four doses of preparations with antigenic values equal to that of the International Reference Preparation of Rabies Vaccine and 20 and 4 times greater. Factors other than antigenicity are also being examined; particular emphasis is placed on the level of protection conferred and the ability of the vaccine to stimulate interferon production.

4.140 In the Region of the Americas, laboratories for the quality control of rabies vaccine began to operate at the Instituto Oswaldo Cruz, Rio de Janeiro, Brazil, with the assistance of the Organization. Another important aspect of assistance in the Region was in the establishment of rabies vaccine production laboratories in countries of Latin America; and Colombia produced more than 1 500 000 doses for

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 1.162.

human and animal use in 1974, part of the production being made available for use in other countries. Assistance on rabies control programmes, dog vaccination campaigns, establishment of rabies diagnosis laboratories and production of rabies vaccines was given to Argentina, Bolivia, Colombia, Grenada, Guatemala, Haiti, Honduras, Nicaragua, Peru, Surinam, and Venezuela. Particular emphasis was given to campaigns to eliminate haematophagous (vampire) bats in Paraná, Brazil, and in Surinam as part of the efforts to control paralytic rabies in cattle.

4.141 In South-East Asia, WHO assisted Nepal and Sri Lanka in developing their national programmes for rabies control. Emphasis was given to helping the countries to become self-sufficient in the production of vaccine for animal and human use.

Brucellosis

4.142 In the Region of the Americas, the Organization assisted Brazil, Cuba, Mexico and Peru in organizing and implementing programmes for the control of brucellosis in cattle, sheep and goats, and swine through systematic vaccination. In some other countries (Colombia, Costa Rica, El Salvador, Jamaica, and Mexico), the Organization cooperated with the governments in setting up and developing joint brucellosis and tuberculosis control programmes.

4.143 The epidemiological studies reported for 1973 by the WHO Collaborating Centre for Research and Reference in Brucellosis, Moscow,¹ were extended and revealed some new trends. Although brucellosis contracted from sheep and goat flocks continued to decline in general, in some republics (Uzbek, Kazakh and Armenian SSRs) there were fluctuations connected with acute outbreaks in animals. Most human cases resulted from direct contact with animals and were observed among animal attendants and those handling meat and other raw animal products. In other republics, for example, in the RSFSR, a marked reduction in ovine brucellosis has brought the infection contracted from cattle into greater prominence. In view of the overall favourable trends in the epidemiology of brucellosis, human vaccination with live vaccine (strain 19-BA) has been reduced sharply and greater reliance is being placed on surveillance and hygienic measures, especially those aiming at personal protection of exposed workers.

4.144 The same centre reported further progress in the laboratory diagnosis of brucellosis in man and animals. The passive haemagglutination test developed at the centre has been confirmed by controlled tests to

be substantially more sensitive and specific than other currently employed tests, and it has been found that a freeze-dried antigen useful in detecting brucellae in infected fluids can also be used in peripheral laboratories for the serological diagnosis of brucellosis in man and animals, including reindeer. Its use in distinguishing between the serological reactions of infected and vaccinated animals is being studied.

4.145 Brucellergen skin tests, though extremely useful in epidemiological investigation, are not fully standardized as some of the underlying phenomena are not well understood. As mentioned in the Annual Report for 1973, the influence of variations in infectious *Brucella* strains on biometric assays were studied in guinea-pigs by a collaborating laboratory in Wisconsin, USA, and the results have now been published.² Further investigation with different components of the *Brucella* extracts has shown that the protein antigens free from polysaccharide are the best for eliciting the delayed hypersensitivity reaction. Studies on the method of sensitization of guinea-pigs used in bioassays showed the disadvantage of adjuvants injected together with bacterial suspensions; the adjuvants stimulate the production of antibodies to protein antigens and this immediate reaction in the intradermal test masks the delayed hypersensitivity reaction.

Leptospirosis

4.146 An indirect haemagglutination test has previously been unsatisfactory for the diagnosis of leptospirosis in man because of lack of specificity. Collaborating workers at the Institute of Microbiology, University of Trieste, Italy, have examined antigens prepared from different saprophytic strains and found that one of them (Patoc I) acts as a specific and sensitive antigen; it detects acute infections when fresh serum is used in the test. These workers have also reported the isolation of three new strains of saprophytic leptospires, one of which occurs in seawater.

4.147 The WHO/FAO Collaborating Centre for Leptospirosis, in London, has reported an interesting shift in the prevalence of leptospirosis in commensal rats. In contrast to earlier findings, the infection is now less prevalent in sewer rats than in those frequenting rubbish heaps. This may be due to the increased amount of detergents and other chemicals in sewage water.

4.148 Leptospires are known to be variable in their virulence and in the frequency with which they infect a given host species. To clarify the basic factors involved, workers at the WHO Collaborating Centre for Lepto-

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 1.174.

² Jones, L. M. et al. (1973) *Brit. J. exp. Path.*, **54**, 368-379.

spiroosis, Moscow, studied the behaviour of various serotypes of the Pomona group in field mice (*Apodemus agrarius*) of different geographical races and found definite variation in the ability of the different races to develop clinical infection and to act as carriers; this appears to be linked with genetic factors.

4.149 The Government of Burma received assistance in setting up a programme of surveillance of leptospirosis. Specimens collected from various parts of the country were examined at the public health laboratory and showed that the infection is widespread and represents a considerable problem.

Anthrax

4.150 Following reports of human anthrax transmitted by drums and other articles produced from raw hides in Haiti, the Organization provided special assistance to the Government in organizing vaccination of animals in the endemic areas. Assistance was also provided to countries in Central America and the Caribbean and to Colombia and Venezuela in the use of laboratory methods to detect infection in sheep and goat skins.

Parasitic zoonoses

4.151 *Hydatidosis*. The serological diagnosis of hydatidosis in man still has its pitfalls, especially when the cysts are located in the lungs and not in the liver. Collaborating workers at the Istituto Superiore di Sanità, Rome, have developed an agar-gel diffusion test that is specific and more sensitive than other available tests in that it also detects hydatid cysts in lungs.

4.152 Collaborating research workers at the School of Veterinary Medicine, Davis, Calif., USA, studying the epidemiology of hydatidosis among shepherds in California, have found it to show a very focal distribution. The presence of hydatid cysts among deer populations in California supports the view that the infection is autochthonous and has a sylvatic transmission cycle.

4.153 The Pan American Zoonoses Centre assisted the National Zoonoses Commission and the animal health services of Argentina to evaluate the progress of the pilot and demonstration hydatidosis control programme initiated in Neuquén Province in 1972. It also advised official laboratories in Chile, Peru and Uruguay on the development of laboratory procedures for the diagnosis of hydatidosis in man and in experimental animals, and it has published a laboratory

manual describing methods of serological diagnosis.¹ In Peru, the Organization is also assisting in the establishment of a programme for the control of hydatidosis in the important agricultural area of the Mantaro river valley.

4.154 *Cysticercosis-taeniasis*. A consultation was held in Munich, Federal Republic of Germany, in August at which the WHO/FAO research programme on this infection was reviewed. Among the aspects discussed were pathogenesis, epidemiology, immunology including immunodiagnosis, and therapy. Notable advances were reported in anthelmintic therapy and immunodiagnosis. Some recently developed anthelmintics are effective and safe against adult taenias in animals, especially if used in a micronized form; this has raised hopes of eventual control by mass treatment in endemic areas. Some of these compounds also show promise of being effective against the cyst in cattle and swine. Further work is needed, however, before these compounds can be used in practice. As to immunodiagnosis, it was noted that there are now available enzyme-related tests and fractionated antigens that make for considerably greater sensitivity and specificity than hitherto, and that may allow infected animals to be picked out before slaughter.

4.155 *Toxoplasmosis*. Collaborating workers at the Institute of Hygiene and Epidemiology, Prague, have prepared an ether-treated toxoplasma antigen that improves the sensitivity of the complement fixation test ordinarily performed with a freeze-dried antigen. The test is easier to perform than the usual dye test and the antigen is stable.

4.156 With the identification in recent years of the oocyst form of *Toxoplasma gondii* in the intestines of cats, detailed studies on its morphology and development have become necessary. Collaborating workers in the Department of Biology, Strathclyde University, Glasgow, United Kingdom, have studied the life cycle of the parasite in cat ileum by electron microscopy.² They have shown that in the schizogonic process nuclear division precedes merozoite formation, which occurs by multiple internal budding. Macrogamete formation is similar to that reported for other coccidian species.

Venezuelan equine encephalitis

4.157 The Pan American Zoonoses Centre provided technical assistance and laboratory support to the

¹ Varela-Díaz, V. M. & Coltorti, E. A. (1974) *Técnicas para el diagnóstico inmunológico de la hidatidosis humana*, Buenos Aires, Centro Panamericano de Zoonosis.

² Ferguson, D. J. P. et al. (1974) *Acta path. microbiol. scand.*, B, 82, 167-181.

public health and agriculture authorities in Argentina to improve the quality of Venezuelan equine encephalitis vaccines, and a general survey of the laboratories producing encephalitis vaccines in Latin America was conducted by the Centre. The Organization advised Venezuela on procedures for identification studies of the virus isolated from the equine encephalitis outbreak in Zulia Province during 1973. The national programme for prevention and control of Venezuelan equine encephalitis in Mexico also received assistance. More than 12 000 000 equines have now been vaccinated with live attenuated vaccine in Mexico, and no cases have been observed since 1972. This country has increased its vaccine production and supplies vaccine to Central America and Panama, Colombia and Peru.

4.158 The Organization in collaboration with the Government of Venezuela organized the first international conference on Venezuelan and other equine encephalitis virus vaccines in Maracay during August.

Foot-and-mouth disease

4.159 The Pan American Foot-and-Mouth Disease Centre, in Rio de Janeiro, Brazil, with the financial assistance of a grant from the Inter-American Development Bank, established a training programme on the production and control of foot-and-mouth disease vaccines on an industrial scale.

4.160 In February a working group convened by the Organization in Washington, D.C., prepared an evaluation guide for foot-and-mouth disease control programmes. This guide was approved by the Ministers of Agriculture during the VII Inter-American Meeting on Foot-and-Mouth Disease and Zoonoses Control, held in Port-of-Spain in April, when the improvement of animal nutrition in the tropics, foot-and-mouth disease, training of personnel in meat inspection, and the health and economic importance of cysticercosis were also considered.

*Food hygiene*¹

4.161 The main areas of concern in the WHO food hygiene programme during 1974 were, as hitherto, the strengthening of food hygiene activities in Member States, developing standards for the laboratory examination of food, and supporting research on microbiological and parasitological agents causing foodborne disease. The work included a number of activities to implement the recommendations made in 1973 by the study group on the sampling and examina-

tion of food² and by the WHO Expert Committee on Food Hygiene (Fish and Shellfish Hygiene)³ whose reports were published during the year, as well as activities on related programmes discussed elsewhere in this report, such as the joint FAO/WHO food contamination monitoring programme (see paragraphs 10.75-10.76) and the programme relating to surveillance of food infections and food poisoning of biological origin (see paragraph 4.17).

4.162 Research assisted by WHO and carried out by the International Commission on Microbiological Specifications for Foods on the isolation of *Salmonella* from naturally contaminated frozen meat showed that incubation of selective enrichment broth at 43°C is significantly better than at 35°C and that use of two selective broths at a time gives better results than use of one alone. In similar studies on naturally contaminated dried foods the difference at the two temperatures was not significant, but subsequent isolation of colonies on plating media was easier when the higher incubation temperature was used for the selective enrichment broth. This information is of great value for the work aimed at the development of internationally acceptable methods for *Salmonella* detection. In additional research involving simultaneous analysis of naturally contaminated dried foods for *Salmonella*, coliform bacteria, and the Enterobacteriaceae as a group, the Commission reported that there is no correlation between the occurrence of *Salmonella* and the fecal indicators studied. Therefore, in dried foods at least, the test for Enterobacteriaceae as a group, which is frequently used as a test for the safety of a food, is not suitable as an indicator of *Salmonella*.

4.163 A comprehensive text dealing with the principles of sampling and the application of those principles to sampling plans recommended for various foods common in international trade has been issued by the Commission after four years of collaborative work by its members with the support of WHO.⁴ The volume represents a valuable contribution to food safety and offers for the first time a sound basis for a realistic judgement of the microbiological quality of foods internationally.

4.164 The National Institute of Public Health, Bilthoven, Netherlands, in WHO-supported studies on the detection of *Trichinella spiralis* in swine reported

² *Wld Hlth Org. techn. Rep. Ser.*, 1974, No. 543.

³ *Wld Hlth Org. techn. Rep. Ser.*, 1974, No. 550.

⁴ International Commission on Microbiological Specifications for Foods (1974) *Microorganisms in foods. 2. Sampling for microbiological analyses: principles and specific applications*, Toronto, University of Toronto Press.

¹ See also paragraphs 10.61-10.77.

on a modification of a recently described enzyme-linked immunosorbent assay for this parasite. This assay is highly sensitive and is capable of detecting *Trichinella spiralis* larvae in their early stages of development in slaughter pigs but it involves the use of a marker enzyme that is comparatively expensive and not readily available. The studies show that modifying the original method by using another enzyme makes it possible to meet the requirements for large-scale slaughterhouse application of the method.

4.165 Assistance in the organization and development of the National Commission for the Prevention of Foodborne Diseases and the preparation of microbiological standards for dairy products was furnished to Argentina by the Pan American Zoonoses Centre, Buenos Aires. In the Region of the Americas as a whole assistance to governments in food hygiene can now be provided also through a regional project that started in 1974. In Brazil the Organization cooperated with the Ministry of Agriculture on a seminar on food microbiology at which, *inter alia*, plans were drawn up for establishing area laboratories as part of the national food control programme. At a regional seminar held in Guatemala in October, under the sponsorship of the Organization and with the collaboration of the Government and UNDP, a critical analysis of food hygiene programmes in Latin America was made.

Comparative medicine

4.166 Comparative medicine is an essential element in the Organization's general veterinary public health activities, since findings obtained in animal models may have significant applications in human disease. Comparative oncology and comparative cardiovascular studies are an important part of this work, but the year's developments in these are reported under the appropriate headings in Chapter 7 for greater convenience; similarly, animal and human influenza have been dealt with together earlier in the present chapter.

4.167 *Comparative virology.* The WHO/FAO programme on comparative virology was reviewed at a workshop held in collaboration with the Fogarty International Center at the National Institutes of Health, Bethesda, Md., USA, in November. Much attention was paid to new developments of particular public health interest, in addition to the continuing production of reference reagents and the establishment of a standardized procedure required for the establishment of a typing system for animal viruses. The Institute of Veterinary Microbiology and Infectious Diseases, Munich, Federal Republic of Germany, reported on an agent isolated from cattle with symptoms of sporadic encephalitis. The agent seems to

belong to the group that includes the viruses of measles, rinderpest, distemper, and subacute sclerosing panencephalitis (SSPE). Studies on the relationship between viruses from acute gastroenteritis of children and of newborn calves revealed that they share antigenic components of the nucleoprotein but may not be identical; attempts to produce the disease in calves and to protect them against calf virus by oral application of human virus were unsuccessful.

4.168 *Comparative mycoplasmaology.* A consultation of participants in the FAO/WHO programme on comparative mycoplasmaology was held in September in Bordeaux, France. Working groups agreed on standardized tests for the determination of glucose metabolism and metabolic inhibition and for the identification of mycoplasmas by electrophoretic cell protein analysis. Procedures for the preservation of mycoplasmas by lyophilization were also agreed upon by an international working group. The programme has been extended by establishing a sixth international team of scientists to deal with T-mycoplasmas. T-mycoplasmas (genus *Ureaplasma*) have so far been isolated from five different animal species (cattle, goats, dogs, cats, monkeys) as well as from man. There is some evidence that these agents play a role in disease of the urogenital tract. Serological heterogeneity and the DNA composition suggest that bovine strains and some human strains represent two distinct populations of mycoplasmas. The species of human *Ureaplasma* appears to comprise eight serologically different subtypes.

4.169 *Comparative immunopathology.* Collaborators at Boston, Mass., USA, have extended earlier observations on the presence of a C-type virus in tissues of people and animals affected with systemic lupus erythematosus. A virus was isolated from naturally occurring cases in dogs, and sera from human cases were found to react with it. A way of preventing the disease in mice by inducing immunotolerance has been devised; the possible implications for the human problem are being studied.

4.170 *Congenital defects.* In view of recent research showing that elevation of body temperature in sheep, guinea-pigs and rats during pregnancy leads to developmental defects in the offspring, collaborators in the USA at the California Primate Research Centre, Davis, have started investigations along the same lines in monkeys. A technique has been developed whereby the monkey's temperature is raised between 2.8°C and 4.5°C during one hour a day for 1-4 days. In some monkeys resorption or abortion occurred, but others remained pregnant and the offspring will be examined for defects.

4.171 Collaborators at the Massachusetts Institute of Technology, Cambridge, Mass., USA, have been studying the effect of exposure of pregnant rats to artificial sunlight. Compared with controls, the litters of such rats were smaller in number, the young were smaller in size, and there was less mitotic activity in their brains. The offspring were also less resistant to *Salmonella* infection. The physiological mechanisms involved are being investigated.

4.172 *Laboratory animal medicine.* With the object of promoting the more general use of standardized laboratory animals of high quality, WHO designated in 1974 two Collaborating Centres for Defined Laboratory Animals (in Japan and the USA) and the designation of a third (in Europe) was under way. These centres will supply breeding nuclei of defined strains of laboratory animals to government institutions and appropriate laboratories. They will give expert advice about the housing, care and use of laboratory animals and will accept WHO-sponsored trainees at the technical and professional levels.

4.173 There has been a greatly increased demand for the service that the WHO Collaborating Centre for Reference and Research on Simian Viruses in the USA provides in examining virus specimens from non-human primates. For herpesviruses alone over 3000 sera were submitted for examination from 40 laboratories, and viruses isolated from suspected human cases of monkeypox in Africa have been studied. A discovery that may have implications for cancer research was that C-type oncornaviruses were noted in the placental tissue of baboons and similar particles have subsequently been seen in human placental tissue.

Prevention of blindness and visual impairment

4.174 In pursuance of resolution WHA25.55 adopted by the Twenty-fifth World Health Assembly in 1972 and of the recommendations of the WHO Study Group on the Prevention of Blindness that met in the same year,¹ active steps are being taken to promote the development of a coordinated programme for preventing blindness and visual impairment.

4.175 In addition to the activities carried out with regard to specific aspects of the problem (discussed elsewhere in this report in connexion with trachoma, onchocerciasis and xerophthalmia) advisory services were provided in the European Region to the Governments of Algeria, Bulgaria, Hungary, Malta and Morocco for the planning and organization of activi-

ties related to the early detection of eye pathology and for the provision of adequate eye care, with special emphasis on eye health and public health ophthalmology.

4.176 Further to a preliminary assessment of the situation with regard to blindness and visual impairment carried out in Bangladesh, Burma and India in November 1973, a survey of the causes and extent of blindness and of the resources available to deal with the problem was made late in 1974 in Northern Nigeria and arrangements are being made for a similar study in Latin America. The conclusions and recommendations emerging from these studies will form the basis for guidelines for similar assessments in the future.

4.177 Data on blindness in Mali that have become available in connexion with the onchocerciasis control programme are being evaluated with regard to the relative contributions to the burden of blindness that are made by the three main causes already identified in that country—trachoma, onchocerciasis and xerophthalmia.

4.178 Contacts with nongovernmental organizations active in this field continue to be reinforced. In particular, it is expected that, as a result of a restructuring and strengthening of the International Association (now Agency) for the Prevention of Blindness, greater collaboration between this organization and WHO will allow for a considerable expansion of the programme through a joint effort aimed at the optimum mobilization of resources. Another significant development in this field is the importance that organizations of and for the blind are attaching to prevention, in contrast to the previously almost exclusive stress on welfare and rehabilitation activities. This point was one of those that emerged most clearly at the Assembly of the World Council for the Welfare of the Blind held in São Paulo, Brazil, in August, at which WHO was represented; that Assembly noted the accelerating increase in the prevalence of blindness in many countries of the developing world and the prediction that, unless decisive action is taken to break the link between blindness and population growth, the number of blind people in the world will double by the end of the century. Other meetings in which WHO took an active part were the Conference on the Prevention of Blindness of the International Association for the Prevention of Blindness and the Annual Meeting of the International Organization Against Trachoma, both of them held in Paris in May, and the Symposium on Prevention of Blindness organized by the American Academy of Ophthalmology and Otolaryngology in Dallas, Texas, USA, in October.

¹ *Wld Hlth Org. techn. Rep. Ser.*, 1973, No. 518.

5. MALARIA AND OTHER PARASITIC DISEASES

5.1 The need for more and better-directed research on the parasitic diseases, including malaria, alluded to in previous reports, has been repeatedly stressed by expert bodies both within and outside WHO. Only through such research can practical methodologies be developed for the conduct of truly effective control operations, particularly in Africa. It is true, of course, that in many institutes in Africa, Asia, the Americas and Europe there are individuals or small groups who are carrying out investigations on certain aspects of these diseases, but these are mostly one-man operations and there is in general little coordination of their work. Recognizing this and the importance of the parasitic diseases, the World Health Assembly in May adopted resolution WHA27.52 calling for intensification and better coordination of research on tropical parasitic diseases. A special programme for research and training in tropical diseases is therefore being prepared that will include as a major component the furtherance of research, with special emphasis on understanding the pathogenesis of the principal parasitic diseases and on developing methods for ascertaining both the quantity and the degree of illness that they cause. Much more has to be learnt about chemotherapy; there are drugs that—in some of these diseases—can be used for individual treatment with appropriate supervision, but what are now needed are drugs and treatment schedules that can be used for mass therapy by the health services. The interactions of different species parasitizing man simultaneously are also not well understood and call for considerable research. The immune response of the host to the parasite has not been fully elucidated for all parasitic species, but recent advances in immunological techniques now make it possible to undertake further studies with some hope of eventually developing immunizing agents. Further reference to this programme is made in Chapter 12.

5.2 An interdisciplinary study has also been started to seek methods by which to identify and assess the health problems, including parasitic and communicable diseases, which man-made lakes and associated development projects are causing or may be expected to cause. This work, extending over several years, should lead to the formulation of practical guidelines for planning and evaluating prevention, control and surveillance measures.

Malaria

Status of the antimalaria programme

5.3 Although good progress in antimalaria activities was achieved in 1974 in several countries in different WHO Regions, the general situation has further deteriorated and malaria is now raging in some countries where, a few years ago, eradication seemed about to be attained. An effort has been made to reassess the present situation and future prospects of a number of national programmes in order to take a more realistic approach to solving the problems that many countries now face.

5.4 The future of the antimalaria programme as a whole depends very largely on the priority that each country gives to the disease and this in turn is dependent upon a realistic determination of its health priorities and is linked to the development of a country health programme. The situation as assessed by WHO in the light of the recent meeting of the WHO Expert Committee on Malaria¹ is that malaria eradication as a time-limited operation is still feasible in the Americas, the Mediterranean basin and parts of the Asian continent and the Pacific, but that in some countries in southern Asia, involving hundreds of millions of people, a general review of the programme is urgently required, bearing in mind that antimalaria action will have to be planned and taken in accordance with the funds, facilities and abilities of the governments concerned. In Africa, the overall epidemiological situation has not changed despite the efforts of many governments to reduce the mortality and morbidity due to malaria; greater efforts are still required to reduce the heavy socioeconomic burden that this disease imposes on most countries in the Region. Moreover, many programmes throughout the world have been greatly hampered by inflation and the critical petroleum situation with the result that much difficulty has been experienced in purchasing insecticides and fuel.

5.5 On 30 September 1974, of the estimated 1945 million people living in the originally malarious areas of the world,² 1422 million (73.1 %) were in areas where malaria had been eradicated or where eradication programmes were in progress. Of these, 808 million

¹ *Wld Hlth Org. techn. Rep. Ser.*, 1974, No. 549.

² From information available.

(41.5%) of the population of the originally malarious areas were living in areas in the maintenance phase; 289 million (14.8%) in areas in the consolidation phase; 324 million (16.7%) in areas in the attack phase; and 1 million (0.1%) in areas in the preparatory phase. Of the 523 million people (26.9%) living in areas where eradication programmes were not yet in operation, 147 million were benefiting from malaria control measures, while governments were making an organized effort to ensure that antimalaria drugs were available as a control measure for a further 93 million. The Organization assisted 65 projects for malaria eradication and other types of antimalaria action during 1974.

5.6 African Region. In this Region, where only Mauritius and Réunion have carried out malaria eradication programmes to a successful conclusion, all antimalaria activities fall within the health service development projects, although the malaria component of these varies considerably from one country to another. WHO assistance is ensured for most of these projects and through three intercountry projects for the provision of advisory services; in addition, three interregional projects on research into malaria epidemiology and insecticides are of particular concern to Africa (see paragraphs 5.24, 5.25 and 6.20). As examples of the assistance rendered in 1974 may be mentioned that given to Botswana to help in planning malaria control activities; to the Central African Republic to draw up a ten-year plan for the entire country; to the Comoro Archipelago in connexion with trials of different techniques for the control of the disease; to Guinea in the formulation of proposals for reorganizing mosquito control in Conakry; to Malawi for assessment of the current control measures, recommendations for the establishment of a malaria control unit, and chemoprophylaxis for pregnant women and for children under 5 years of age; to Rwanda to organize control programmes in priority areas; to the United Republic of Cameroon on the techniques of the ultra-low-volume application of insecticides in urban areas; and to Zambia for assessing current activities. In Nigeria, an assessment was made of the control activities in eight of the 12 states of the Federation and assistance given for their improvement or development. The year also saw the completion of a control trial in the Klouto region of Togo; in a forest area with hyperendemic malaria one round of DDT spraying led after two years to the disappearance of *Anopheles funestus*, to a fall in malaria prevalence, and to a reduction of outpatient attendances by one-third.

5.7 Region of the Americas. The capital and effort invested in malaria eradication since 1957 are yet far from having achieved the desired objective. Never-

theless they have made it possible for 12 political units in the Region to be completely freed of the risk of malaria infection, and another eight units should attain the same status in the near future, if current advances can be continued. These 20 units represent over 80 million persons (or 41% of the total population in the original malarious areas). In the remaining 14 political units of the Region malaria has been eradicated or transmission interrupted among some 56 million inhabitants, leaving about 60 million in areas where further efforts are required. However, as in these areas great efforts at economic development are being made, any set-backs in the programme to interrupt malaria transmission would not merely bring about a resurgence of the disease but also jeopardize economic progress. This has been recognized by the Central American Bank for Economic Integration, which is planning financial assistance for some anti-malarial programmes. The development of vector resistance to the new insecticide propoxur constitutes a serious problem in the central parts of the Pacific coastline of El Salvador and Guatemala. Investigations to develop alternative attack measures and to test new insecticides have therefore been intensified by the Organization through a research team working in El Salvador. It is of interest to note two different approaches to antimalaria work in this Region. Some countries, such as Mexico and Brazil, gave high priority during the year to areas where malaria eradication as a time-limited operation seems feasible, maintaining there a particularly high operational standard; in other parts of these countries measures for longer-term control were continued in order to reduce transmission until the socioeconomic situation and technical and operational factors are such as to allow the launching of time-limited eradication measures. In both these countries this has led to a reduction of the malaria incidence in the priority areas and may result in complete interruption of transmission in limited areas. In other countries the priority was given to zones where particularly difficult problems must be faced; for example, in Venezuela advice was given on the implementation of measures in areas where it has not been possible to eradicate the disease.

5.8 South-East Asia Region. Despite the very appreciable initial impact of malaria eradication programmes in this Region, the incidence in several of the eight countries originally at malaria risk has shown a considerable increase since 1969; it would hardly be too much to say that the majority of programmes are either at a standstill or losing ground. The situation in Burma, India, Nepal, Sri Lanka and Thailand is fluid and it is envisaged that a further increase in incidence will occur unless every possible aspect of the anti-

malaria activities is strengthened. In August the National Malaria Eradication Service, in consultation with WHO, made a careful assessment of the programme prospects in India and of how activities might be adapted to the country's resources and possibilities. Recommendations were made to the Government for maintaining strenuous efforts in the most receptive and vulnerable areas or in those areas of foremost importance for the economic development of the country and for conducting more limited control activities in the rest of the country. This revision of the Indian programme may lead to a reappraisal of the programmes in neighbouring countries. In Bangladesh, a plan of operations was worked out jointly by the Government and WHO. Out of a total population of 77 million, 33 million are in areas in the pre-maintenance phase, 33 million in areas in the consolidation phase, and 9 million in areas in the attack phase. Cases of falciparum malaria are generally confined to attack-phase areas. Except in those areas, the Government is going ahead with the integration of the malaria programme in the general health service. In Burma antimalaria operations are confined to the Irrawaddy basin and delta for the time being. The available data suggest that *Plasmodium falciparum* resistance to chloroquine is spreading. The situation in Java, Indonesia, is stabilizing and should improve when additional supplies of DDT become available as a result of assistance from USAID. In the Maldives the prospects for time-limited malaria eradication seem good and the Government is giving high priority to the disease. In Nepal some areas now in the consolidation phase may have to revert to the attack phase, depending upon whether external assistance is received for the purchase of insecticides and on how the situation develops along the frontier with India. In Sri Lanka increasing operational problems, lack of public co-operation with regard to spraying, and a possible extension of the areas where *An. culicifacies* is resistant to DDT raise some doubts about the immediate future of the programme; the number of cases of falciparum malaria has substantially increased. In Thailand, problems such as chloroquine resistance in *P. falciparum*, outdoor transmission, resistance of vectors to insecticides, and financial stringencies have slowed down the programme and the prospect of achieving interruption of transmission in the whole country is remote. WHO is helping the Government with training and entomological research.

5.9 European Region. The susceptibility of the anopheline species that occur in this Region to strains of *P. falciparum* from Africa is being assessed in view of the large number of malaria cases occurring in travellers returning to Europe (see paragraph 5.18). The list of countries in which malaria has been certified

by the Organization as having been eradicated was extended in 1974 to include Portugal and Yugoslavia. There are still small zones in the consolidation phase in the USSR and in Greece, and assistance was given to the latter country to investigate the reasons for the persistence of the transmission in certain areas. Assistance was also continued for antimalaria programmes in Algeria, Morocco, and Turkey. In Algeria, a real danger arises from the main vector's resistance to dieldrin and its developing resistance to DDT. Help was given to continue the study initiated in 1972 on DDT resistance. The Algerian Government decided to step up the implementation of the programme and to extend it to all malarious areas. More than 3 million people were covered by the spraying campaign in 1974 and the number of detected cases was lower than in 1973. At the request of the Government, the WHO team was withdrawn at the end of September 1974. At the request of the Moroccan Government, the WHO team assisting the antimalarial programme in that country was withdrawn at the end of 1973, but the Organization continues to receive reports on the epidemiological situation and on spraying activities. There seem to have been fewer cases in 1974 than in 1973, particularly in regions where the summer of 1973 was dry. The dwellings of approximately 1.4 million people were treated by spraying operations in 1974. In Turkey new malaria cases again occurred as a result of population movements. Some areas of the Çuküröva plain have therefore reverted to the attack phase. On the other hand, the absence of transmission in other southwestern areas should permit them to progress to the consolidation phase. Almost a million people throughout the country were protected by spraying operations but here, too, the resistance of certain vectors to dieldrin, DDT, or both, creates great problems, the more so as malathion is not well accepted by the population and is very much more expensive.

5.10 Eastern Mediterranean Region. Progress was made in the eradication programmes in Iran, Iraq, Jordan, Syrian Arab Republic and Tunisia, but Afghanistan and Pakistan continued to encounter administrative, operational and technical problems and recorded high rates of malaria transmission. In both these countries consultations were held with funding agencies with a view to obtaining assistance for their malaria programmes. For Afghanistan, a project document has been submitted to UNDP for assistance over a three-year period. For Pakistan, WHO helped to draft a plan of operation for discussion with USAID, and a USAID/WHO mission reviewed the malaria eradication programme. Their findings were submitted to the Pakistan Government and to USAID as a basis for a possible USAID loan to cover three years.

Malaria control measures continued in Democratic Yemen, Ethiopia, Saudi Arabia, Somalia, Sudan, and the United Arab Emirates. Oman is establishing a malaria control programme. In Sudan, WHO recommended the use of malathion in combination with mass drug distribution in the Gezira Irrigated Area in preference to antilarval measures, which have proved unsatisfactory.

5.11 *Western Pacific Region.* The non-malarial status of the countries and territories of the South Pacific shown in the WHO Supplementary List of Malaria-free Areas¹ was maintained; these have an estimated total population of 4.5 million. In the countries and territories from which malaria has been eradicated as an endemic disease the situation also remained satisfactory; these comprise the originally malarious areas of Australia, Brunei, Hong Kong, Japan including the Ryukyu Islands, Macao and Singapore, with a total of about 11 million originally at risk. In two of these (Brunei and Hong Kong) WHO assisted in reviewing the vigilance organization during the year. In the British Solomon Islands Protectorate indoor spraying operations could be stopped in a great part of the Western District. Technical difficulties have been experienced along the northern coast of Guadalcanal, and WHO provided assistance for supplementary attack measures. In Peninsular Malaysia part of the initial operational area in the northern States entered the consolidation phase and supplementary attack measures were introduced in some persistent foci, with promising results; malaria has become a minor public health problem in extensive areas of Sabah and Sarawak as a result of the Government's sustained efforts. In the Philippines a rather static situation has developed owing to operational and administrative difficulties aggravated by the withdrawal of bilateral assistance in 1973. In the New Hebrides, where DDT indoor spraying was initiated, WHO provided entomological expertise for the collection of baseline data and for the institution of entomological evaluation measures. UNDP/WHO assistance for Papua New Guinea resulted in some progress in the extensive antimalaria programme there. The UNDP/WHO-assisted antimalaria projects in the Indo-Chinese peninsula all became operational; the political situation continued to limit activities, particularly in the Khmer Republic, but modest progress was made in Laos.

Research

5.12 A symposium on malaria research was held at Rabat with the collaboration of the Governments of Morocco and of the United States of America jointly

with WHO to review research into the clinical aspects of the disease and its pathology, chemotherapy, immunology and epidemiology; developments in research on the anopheline vector and its control were also covered, as was training in research techniques. A special issue of the *Bulletin of the World Health Organization* was published, containing papers presented at the meeting, which was attended by research and field workers from four WHO Regions.²

5.13 During 1974, WHO concluded 41 new or renewed agreements on malaria research to study the biology of the parasite, the epidemiology of the disease and its chemotherapy, drug resistance of the parasite, and the methodology of operations. The following paragraphs summarize some recent findings from research co-ordinated, planned and assisted by the Organization.

5.14 *Biology of malaria parasites.* Considerable progress was made in the development of immunizing agents against malaria, using X-irradiated sporozoites or merozoites. At the Department of Preventive Medicine, New York University Medical Center, USA, immunization attempts in simian hosts have shown that *Macaca mulatta* with high titres of circumsporozoite antibody two months after inoculation with X-irradiated *Plasmodium cynomolgi* sporozoites remained negative when they were challenged with the size of inocula of this parasite that produced patent infections in control animals.³ In related investigations it has been shown that, in man, induced immunity to both *P. falciparum* and *P. vivax* is species-specific but effective against a wide range of strains within the species.⁴ Continuing studies at the Department of Chemical Pathology, Guy's Hospital Medical School, London, using erythrocyte-freed *P. knowlesi* merozoites, which remain viable at 22°C for less than one hour and which have been inactivated by an exposure of 20 krad, have demonstrated that the merozoites are non-infective for *Macaca fascicularis*, the natural host of this parasite, for up to 9 months. Studies in *M. mulatta*, in which *P. knowlesi* infection is normally fatal, showed that protection was afforded to similarly immunized animals, which were also resistant to subsequent infection with variants of the same parasite species.⁵

5.15 Various studies are being made on the metabolism of the parasite freed from the erythrocyte. The Department of Pharmacology, West Virginia University School of Medicine, Morgantown, USA, investi-

² *Bull. Wld Hlth Org.*, 1974, **50**, No. 3-4.

³ Nussenzweig, R. S. & Chen, D. (1974) *Bull. Wld Hlth Org.*, **50**, 293-297.

⁴ Clyde, D. (1974) *Bull. Wld Hlth Org.*, **50**, 291 (Discussion).

⁵ Mitchell, G. H. et al. (1974) *Nature (Lond.)*, **252**, 311-313.

¹ *Wkly Epidem. Rec.*, 1973, **48**, 335.

gating purine pathways and the enzymes involved as part of a study of how various antimalarial drugs exert their activity, has shown that hypoxanthine, which is capable of being incorporated in adenosine, appears to be superior to it as a precursor for synthesis of nucleic acids in the parasite. At the Division of Parasitology of the National Institute for Medical Research, London, studies on the metabolic capacity of the pentose phosphate pathway and on RNA synthesis are designed to lead to understanding the metabolic requirements of the parasite for *in vitro* cultivation; results reported in 1974 show that *P. knowlesi* obtains at least some of its enzymes for the pentose phosphate pathway from the host erythrocyte. The Clinical Research Centre, Harrow, United Kingdom, attempted to cultivate *P. berghei* in mouse blood in diffusion chambers inserted into the peritoneal cavity of mice but succeeded in obtaining growth through one generation only; it is suggested that the multiplication of the plasmodia depends on their sequestration on some particular organ or tissue.

5.16 Until recently, little progress had been made in the study of the physiological and therapeutic aspects of cerebral malaria, owing to the lack of an animal model. However, at the Department of Preventive Medicine, New York University School of Medicine, USA, a sudden enhancement in virulence of a mild *P. berghei yoelii* strain was observed after the strain was withdrawn from deep-freezing; this caused fulminating, fatal infections in mice, with intravascular sequestration of infected erythrocytes and blockage of brain capillaries as in human cerebral malaria. The characteristics of the strain have been maintained after a number of cyclical transmissions through *An. stephensi*.¹

5.17 As a part of studies on the effects of heterologous immunity on patterns of infection, the Department of Zoology, King's College, London, initiated work using inocula of single parasites, and these have been found to give remarkably uniform and predictable infections. It has also been found that heterologous immunity as between piroplasms and malaria parasites occurs not only in mice, but also in rats, in which the heterologous immunity passes from mother to offspring but cannot be transferred with convalescent serum.

5.18 *Malaria epidemiology.* Increasing numbers of malaria cases are being imported into Europe, and there is some concern lest transmission of the disease become re-established in the southern parts of the continent. Investigations carried out by the Institute of

Parasitology, Monticelli, Italy, in the central and southern parts of that country have shown a diminution in the distribution and density of mosquito vectors in a number of areas, partly in consequence of land reclamation and the use of insecticides in agriculture and against pests in tourist areas, but also partly (as has been noted in the Netherlands, too) owing to pollution of surface water. However, in two areas with relatively little industrial development and a high receptivity to malaria there was an actual increase of one potential anopheline vector. In a related study, preliminary results indicate that *An. atroparvus* from Italy, where it was formerly a vector, is not receptive to a Nigerian strain of *P. falciparum*. Studies in Thailand by the National Malaria Eradication Service on the evaluation of DDT house-spraying on malaria transmission by two exophilic vectors, *An. balabacensis* and *An. minimus*, have been completed;² they indicate that transmission has persisted despite a significant reduction in the vectorial capacity of *An. balabacensis* and to a lesser extent in that of *An. minimus*. The movement of the human population during the dry and pre-monsoon seasons into the deep forest, where *An. balabacensis* continues to be prevalent, was an important factor contributing to the maintenance of transmission; where there is forest clearance, *An. balabacensis* disappears, but *An. minimus* remains and the transmission continues, albeit at a much lower level.

5.19 For epidemiological studies, more use is being made of serological tests in malaria, and their merits and limitations were recently reviewed.³ Comparative studies of the indirect fluorescent antibody test (IFT) and the indirect haemagglutination test (IHA) being undertaken by, among others, the WHO Collaborating Centres concerned with malaria serology in London and the Netherlands, have recently been reported.⁴ The centre in the Netherlands has also carried out trials on the reproducibility and specificity of the IHA test.^{5,6}

5.20 It is of obvious epidemiological importance to be able to determine whether a mosquito feeds on more than one human subject in the same night; the Imperial College Field Station, Ascot, United Kingdom, has succeeded in employing a haptoglobin system using electrophoretic means under laboratory

¹ Yoeli, M. & Hargreaves, B. J. (1974) *Science*, **184**, 572-573.

² Ismail, I.A.H. et al. (1974) *Acta tropica*, **31**, 129-164.

³ *Bull. Wld Hlth Org.*, 1974, **50**, 527-535.

⁴ Bidwell et al. (1973) *Bull. Wld Hlth Org.*, **49**, 313-316.

⁵ Meuwissen, J.H.E.T. et al. (1973) *Bull. Wld Hlth Org.*, **49**, 317-319.

⁶ Meuwissen, J.H.E.T. et al. (1974) *Bull. Wld Hlth Org.*, **50**, 513-519.

conditions for this purpose. It is also valuable to be able to determine vector longevity, and a new method has been employed for this, utilizing the number of daily growth layers in the thoracic apodemes, by the Department of Parasitology, Hebrew University, Jerusalem. The results showed that successful determination of the chronological, as opposed to the physiological, age can be achieved not only with field-collected *An. gambiae* and *An. funestus*,¹ but also with *An. culicifacies* from Sri Lanka, *An. balabacensis* from Thailand, *An. minimus flavirostris* from the Philippines, *An. farauti* from Guadalcanal, British Solomon Islands Protectorate, and *An. stephensi* from Iran.

5.21 The WHO Collaborating Laboratory for Cytogenic Studies in Malaria Vectors, Rome, conducting field studies on *An. stephensi* in Kano State, Nigeria, has found significant contrasts among carriers of different chromosome arrangements in respect of feeding on man and animals, biting at different times of night, and resting indoors and outdoors. Similar findings were obtained in Ethiopia by the Institute of Pathobiology, Addis Ababa.

5.22 *Chemotherapy of malaria and drug resistance.* The WHO Collaborating Centre for Reference and Research on Screening of Potential Antimalarial Compounds, Liverpool, United Kingdom, examined eight new compounds prepared by the Institute of Organic Chemistry, Warsaw, and structurally related to the pyrocatechol, RC 12; three of these showed antimalarial activity. The Institute for Applied Chemistry of the Friedrich-Alexander University, Erlangen, Federal Republic of Germany, developed a number of 6-aminoquinolines and other compounds. A study undertaken at that Institute confirms that the 6-aminoquinolines act through a biotransformation into a quinonoid molecule similar to that of the 8-aminoquinolines.

5.23 There has been a tendency for resistance of *P. falciparum* to 4-aminoquinolines to spread further in some parts of Asia, and in the course of work on the assessment of blood levels of antimalarials in persons returning from these areas to Japan,² the Institute of Medical Science, University of Tokyo, has reported cases of such resistance from widely separated islands of Indonesia; the *in vitro* chloroquine sensitivity test was used to confirm the results. In the Philippines, the Malaria Eradication Service has set up a special team to assess the field value of that test and the results so far are promising.

¹ Schlein, Y. & Gratz, N.G. (1973) *Bull. Wld Hlth Org.*, **49**, 371-376.

² Ebisawa, I. et al. (1974) *Jap. J. exp. Med.*, **44**, 151-163.

5.24 *Methodology of control.* The intervention phase of the WHO field research project on the epidemiology and control of malaria in the African savanna, conducted at Kano, Nigeria, was completed in December 1973, and analysis of the data collected has been in progress in 1974. The mathematical model developed on the basis of longitudinal observations during this project has been corrected after cross-checking with actual happenings in the field. As was mentioned in the Annual Report for 1973,³ this model, which will be further verified with epidemiological data available from another project, may become an important tool for decisions on the type of malaria control interventions in Africa likely to yield the best cost/benefit ratio. It already suggests that the use of residual insecticides in the savanna areas of West Africa is of little value for controlling the transmission of malaria there and therefore for limiting morbidity. On the other hand, the dose of drugs required for suppression of malaria in this holoendemic area can be greatly reduced. Measurement of the longitudinally determined immunological parameters is helping in the elucidation of certain features of protective immunity. The continued observation of the aftermath of interventions in the field during this period of analysis of data will further put to the proof the dependability of the model.

5.25 In the stage VII (epidemiological) trial of the use of fenitrothion as a residual insecticide in Kisumu, Kenya (see paragraph 6.20), malaria transmission, which had been interrupted since October 1973 in the evaluation zone, reappeared in May 1974 at the peak of entomological inoculation rates during a period when only half the recommended dosage was applied owing to shortage of insecticide. Longitudinal serological surveys are being performed in the protected and comparison areas to assess the effect of the reduction of transmission.

Coordination and meetings

5.26 Although direct assistance by UNICEF for antimalaria programmes has been almost completely phased out, indirect assistance for improving facilities for the diagnosis and treatment of malaria patients has been extended in a number of developing countries, particularly in Africa, through programmes for strengthening the health services. UNDP has provided similar assistance and has also directly supported antimalaria programmes in a number of countries, mainly through meeting the costs for advisory personnel. Bilateral assistance from the United States Government for antimalarial programmes, which had been reduced in recent years, has been

³ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 2.26.

expanded again. Other bilateral assistance has also been valuable for individual recipient programmes, although it has remained very limited if considered on a global scale.

5.27 The Organization promoted a number of meetings to coordinate antimalaria activities in border areas during the year; these concerned Colombia and Panama, French Guinea and Surinam, India and Nepal, and the Syrian Arab Republic and Turkey. In May participants from Australia, British Solomon Islands Protectorate, New Hebrides, Papua New Guinea and WHO attended the Sixth South-West Pacific Malaria Conference held in the British Solomon Islands Protectorate.

Schistosomiasis

Epidemiology and control

5.28 There is a large body of epidemiological information about schistosomiasis: the extensive distribution of infection due to *Schistosoma japonicum*, *S. mansoni* and *S. haematobium* is well known, and the recent discovery of the extension of areas of infection due to *S. intercalatum* in West Africa is leading to increasing recognition of that parasite; high prevalence rates in endemic areas, particularly in the younger age-groups, are usual and provide a reservoir from which the infection is spreading when existing water resources such as man-made lakes or irrigation systems are developed; population migrations may introduce the infection into areas populated by an appropriate intermediate snail host. Among the unsolved problems of the infection are the assessment of the pathological importance at community level, the measurement of its socioeconomic effects, and ascertainment of the degree to which immune processes, or diminished water contact in older people, or the interactions of both processes, contribute to the lower prevalence rates commonly found in older age-groups in endemic areas. WHO contributes to the solution of all these problems. Support for longitudinal studies of community morbidity is given in Brazil, Nigeria and Uganda; the most appropriate measurements of the socioeconomic effects of infection are being sought; and in Ghana sociological techniques for the study of behavioural patterns are being introduced by WHO in the UNDP project for research on the epidemiology and methodology of schistosomiasis control in man-made lakes, to which further reference is made below.

5.29 Technical advances have justified the cautious optimism of the WHO Expert Committee on Schistosomiasis Control that met in 1972.¹ However, while

acceptable and efficient therapeutic drugs and molluscicides exist and are widely used in control schemes, it has become increasingly obvious that no one agent is entirely satisfactory. The restricted range of drugs available for schistosomiasis and other parasitic diseases led WHO to assist the Institut de la Vie, Paris, in the organization in June of a conference at Versailles, France, for members of the pharmaceutical industry of many countries, representatives of national and intergovernmental bodies and university-based participants to discuss methods of remedying the situation. WHO also participated in a workshop organized by the National Institutes of Health, Bethesda, Md., USA, at which the importance of adequate preclinical screening in mammalian systems for mutagenicity, teratogenicity and carcinogenicity in potential antischistosomal drugs was particularly emphasized; for this meeting the Organization prepared a review of the toxicity of such drugs.

5.30 Among examples of WHO's assistance to countries in this field may be cited advice to Gabon on schistosomiasis control, assistance in Guadeloupe on the setting up of a control programme and to Surinam in reviewing control measures, and advice to the Philippines on a WFP agro-engineering project designed to control *S. japonicum*. In Indonesia, an operational research programme has been instituted for the study of schistosomiasis due to the same parasite in Central Sulawesi, and of its possible spread in connexion with irrigation schemes. In the Eastern Mediterranean Region the disease is a major cause of morbidity, and advice was given by WHO to national authorities in almost all countries in the Region. A successful control programme for *S. haematobium* in Tunisia continues the application of drugs and molluscicides, while in Yemen basic epidemiological studies of the snail host and transmission patterns have commenced.

5.31 Major studies on schistosomiasis are centred on the interregional project on research on the epidemiology and methodology of schistosomiasis control in man-made lakes. WHO is the executing agency for this UNDP-financed project based in Ghana, whose relevance extends far beyond the West African scene, and with which are linked studies on Lake Nasser, Egypt, and Lake Kossou, Ivory Coast, where the contrasting problems of schistosomiasis transmission are being compared with those of Lake Volta. The project headquarters are in Accra and there is a field station at Anyaboni on the shores of Lake Volta. Different aspects of the work are concerned with collecting basic epidemiological, biological and sociological data in a defined area on the lake shore. Studies on prevalence, incidence and intensity of

¹ *Wld Hlth Org. techn. Rep. Ser.*, 1973, No. 515.

infection due to *S. haematobium* show that some 30% of children are infected by the end of the first year of life and age-specific prevalence rates rise rapidly. Extended surveys have now shown that, at 10 years of age, over 90% of children have active infection demonstrable on one urine examination. Intensive studies in depth by the biological team have established the identity of the major snail intermediate host (*Bulinus truncatus rohlfsi*) and determined its behaviour in relation to the varying water level of the lake, the vegetation of the lake, and seasonal fluctuations in its population densities. Transmission has been confirmed to be essentially focal, being associated with different specific types of water-contact site at different times in the yearly cycle; this raises some hope that focal application of molluscicide may be of benefit in control. The sociological section of the project (which it was possible to reinforce during the year as a result of financial assistance from the Edna McConnell Clark Foundation, USA, through the Voluntary Fund for Health Promotion) observes man's behavioural patterns in the project area and in particular water-contact patterns and the influence of individual and population movements on disease transmission. These findings are related to the prevalence and intensity of infection.

5.32 National experts in Ghana assisted by WHO have conducted two successful chemotherapeutic trials of the effect of metrifonate, a schistosomicide, in patients exhibiting *S. haematobium* infection together with either a haemoglobinopathy or glucose-6-phosphate dehydrogenase deficiency, two conditions particularly prevalent in this geographical area.

Research

5.33 One of the important topics of schistosomiasis research stimulated and assisted by WHO is immunity. The tissue reactions of snail hosts to various species of schistosome are being investigated at the British Museum (Natural History), London. The Department of Medical Helminthology, London School of Hygiene and Tropical Medicine,¹ studying the induction of immunity in mammalian hosts, has successfully elicited some degree of immunity in baboons inoculated with cercariae of homologous or heterologous origin attenuated by irradiation, although considerable pathological changes still resulted. Other aspects of schistosomiasis immunology are discussed in Chapter 8.

5.34 Research into drugs for prophylactic or therapeutic use is supported at laboratory and clinical levels. Having completed their studies of the chemoprophylactic effect on *S. mansoni* of lucanthone, hycanthone,

niridazole and oxamniquine administered to mice in multiple doses,² workers at the Department of Parasitology, Liverpool School of Tropical Medicine, United Kingdom, are concentrating on the action of these drugs in single doses and have shown that oxamniquine given thus has a marked prophylactic effect. At the Schistosomiasis Research Unit, Belo Horizonte, Brazil, a single intramuscular injection of oxamniquine at 7.5 mg/kg body-weight resulted in parasitological cure in all 24 *S. mansoni* patients tested. Oral oxamniquine has hitherto given less good results but recent new formulations tested by the Unit have shown greater promise. Encouraging results were also obtained in tests of a series of tetrahydro- and pyrazinoquinolines.³ Work was also undertaken on the loss of resistance to hycanthone and oxamniquine in *S. mansoni* infections in mice, and it was shown that a Puerto Rican strain resistant to these compounds lost resistance by the F₁₀ generation; while it is not known what proportion of strains encountered in nature may show any degree of drug resistance, the possibility of their occurrence must be borne in mind when using or testing chemoprophylactic or chemotherapeutic drugs.

5.35 Active research on molluscicides continues to be supported in a number of countries. One new development during the year was the demonstration, by workers at Tsukuba University, Japan, of an active molluscicidal factor in bark extract from *Entada phaseoloides*, a climbing plant from which a substitute for soap is derived in the Philippines.

5.36 Doubt about the ill-effects of chemicals on the biota and the environment has led to a resurgence of interest in biological control methods. Although such methods are rarely applicable in the field at present, careful preliminary laboratory work is essential to appreciate their potential and to ascertain their possible dangers. Hence studies have begun with WHO support at the Faculty of Health Sciences, University of Brasilia, on the use of Sciomyzidae larvae (insect predators of vector snails) and on laboratory studies of the genetics of snails considered to be potential competitive displacers of vector snails.

Onchocerciasis

Onchocerciasis control programme in the Volta River basin area

5.37 The Organization's main activities in onchocerciasis during 1974 were concentrated on the control

² Jewsbury, J.M. (1973) *Ann. trop. Med. Parasit.*, **67**, 431-438.

³ Pellegrino, J. et al. (1974) *J. Parasit.*, **60**, 723-725.

¹ Taylor, M.G. et al. (1973) *Bull. Wld Hlth Org.*, **49**, 57-65.

programme in the Volta River basin area, which was launched at the beginning of the year following the winding-up in December 1973 of the preliminary assistance mission to the seven governments concerned (Dahomey, Ghana, Ivory Coast, Mali, Niger, Togo, Upper Volta). In view of the vast scale of this undertaking, described in the Annual Report for 1973,¹ it is obviously not possible to begin operations simultaneously throughout the 700 000 km² that are to be covered. Therefore the first phase (1974-75) is restricted to the basins of the Black Volta, the Comoé-Léraba, the Bandama and the Banifing, as well as to the isolated focus of Bandiagara; thus involving parts of Ghana, Ivory Coast, Mali and Upper Volta. During the first part of the year the main activities were staff recruitment and training and the laying in of supplies and equipment; in the later part the entomological surveillance network was established, supply bases for insecticides and fuel were set up, and aerial spraying operations began in December. Baseline data on disease prevalence, incidence and severity have been collected by the epidemiological evaluation network, which will conduct surveys at three-year intervals to assess the effect of the control operations, which are aimed at the vulnerable larval stages of the *Simulium* vector.

5.38 The organizations concerned in this programme together with the seven governments are WHO as executing agency, FAO, IBRD and UNDP. Applied research financed from the programme's funds is being undertaken at the Onchocerciasis Entomological Centre of the Organization for Coordination and Cooperation in the Control of Major Endemic Diseases (OCCGE) at Bouaké, Ivory Coast, with assistance from personnel from the Office de la Recherche scientifique et technique outre-mer (ORSTOM); at the Institute of Aquatic Biology, Achimota, Ghana; at the Hydrobiology Section of the ORSTOM mission at Bouaké; and by research workers from institutions outside the programme area. The research includes studies on the *S. damnosum* complex (see paragraph 5.43), vector population sampling, insecticides and formulations (paragraph 6.18), insecticide susceptibility, spraying equipment (paragraph 6.26), and appropriate environmental monitoring (paragraphs 6.8 and 6.19). Funds made available by UNDP were used for training personnel, and for studies on chemotherapy and on the dynamics of onchocerciasis transmission conducted in Upper Volta by the national Mobile Ophthalmological Team and by OCCGE and in Ghana by the Royal Commonwealth Society for the Blind, of London.

5.39 To provide a firm basis for the clinical and epidemiological investigations to be made in this control programme and elsewhere, the Organization published a handbook on the symptomatology, pathology and diagnosis of onchocerciasis prepared by an international group of experts.²

Epidemiology and pathogenesis

5.40 An important new focus of onchocerciasis was reported in 1974 from northern Brazil, additional to those already known in neighbouring countries and in Middle America; experts from a number of countries in the Region of the Americas and elsewhere met in Washington, D.C., in November to review the distribution of the disease and to make recommendations on control, prevention and treatment. Studies were carried out in the Sudan at the end of 1973 into the apparent natural decline of onchocerciasis in the endemic focus at Abu Hamed; they have now shown that no decline is in fact occurring. The disease in this northerly focus is characterized by a severe dermatitis, whereas in Bahr El Ghazal Province in the south it results in serious ocular complications; indeed, it is considered to be the principal cause of visual impairment and blindness in Southern Sudan. Following these studies, further WHO assistance was provided for the control programme.

5.41 The Helminthiasis Research Unit at Kumba, United Republic of Cameroon (previously of the United Kingdom Medical Research Council, and recently incorporated within the Cameroonian Office national de la Recherche scientifique et technique) and the WHO Collaborating Centre for Filarioidea, London, have proceeded with their longitudinal studies of the disease in defined populations and have shown clear differences in the clinical aspects of the disease in rain forest and savanna areas. Of particular importance has been the demonstration that in the savanna areas severe and sometimes fatal reactions occur in patients given even very low doses of diethylcarbamazine and that high levels of *Onchocerca* microfilariae appear in the blood, the urine and even in the sputum after treatment.³ Although the present drugs are unsuitable for mass chemotherapy, schedules have been developed for the detection and treatment of patients at risk of developing severe eye lesions. In this connexion, a consultation was held in November in Washington, D.C., to consider the possible use of a slow-release preparation of diethylcarbamazine for topical application in ocular onchocerciasis.

² Buck, A.A., ed. (1974) *Onchocerciasis*, Geneva, World Health Organization.

³ Fuglsang, H. & Anderson, J. (1974) *Trans. roy. Soc. trop. Med. Hyg.*, 68, 72-73; *J. Helminth.*, 48, 93-97.

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraphs 2.42-2.45.

Research

5.42 Research on all aspects of onchocerciasis has been greatly thwarted by the lack of a practical animal host; only the chimpanzee is at present used for experimental infections, though natural infections have been reported in the gorilla and the Mexican spider monkey. The California Primate Research Center, University of California, Davis, Cal., USA, is therefore screening various species of primates for susceptibility to *O. volvulus*, using infected *Simulium* species from Guatemala. A further investigation has been carried out in Guatemala by the Department of Epidemiology, Johns Hopkins University, Baltimore, Md., USA, on the epidemiology of microfilaruria and its presence in urine, blood and sputum after 50 mg of diethyl-carbamazine. Observations were also made on the daytime periodicity of microfilariae in the skin of infected individuals and it was shown that the maximum density coincided with the peak biting time of the vector, *S. ochraceum*.

5.43 At the East African Institute of Malaria and Vector-borne Diseases, Amani, United Republic of Tanzania, in collaboration with the Department of Entomology of the Institute of Tropical Medicine, Tübingen, Federal Republic of Germany, *S. damnosum* has for the first time been taken through all stages of its life-cycle in the laboratory. It was found that the eggs of some East African *Simulium* species remain viable at as low a temperature as 2°C for a number of weeks. Observations on larvae of the *S. (Lewissium) neavei* complex indicated they were capable of surviving in association with crabs in dried-out streams and rivers for several weeks after the surface water had virtually disappeared. This has practical importance for the control of simuliids by the use of insecticides flowing downstream. At Bouaké, Ivory Coast, the Onchocerciasis Entomological Centre of OCCGE, studying the members of the *S. damnosum* complex, has found that the various sibling species show diverse intraspecific polymorphic inversions (floating inversions) depending on the area in which they are caught. The morphological and biological differences of the members of the complex are being investigated.

5.44 Comparative immunological investigations on different clinical forms of onchocerciasis and an evaluation of differences between cell-mediated immunity and humoral factors were carried out by the Clinical Division, University Centre for Health Sciences, University of Yaoundé. Preliminary results indicate differences in the types of immune response shown by patients with different clinical manifesta-

tions; this may lead to a better understanding of the pathogenesis of the disease. A collaborative research programme on the isolation of antigens of *O. volvulus* was started during the year by the Minerva Institute for Medical Research, Helsinki, the State Bacteriological Laboratories, Stockholm, and the National Institute of Public Health, Bilthoven, Netherlands, in cooperation with the African Institute of Tropical Ophthalmology, Bamako.

Other filarial infections

Epidemiology and control

5.45 As indicated in the third report of the WHO Expert Committee on Filariasis,¹ there is evidence to suggest that filariasis due to *Wuchereria bancrofti* and *Brugia malayi* has increased in both prevalence and distribution in many parts of Asia and Africa. Among the other filarial parasites of man some, such as *Loa loa* and *Dipetalonema streptocerca*, are of limited distribution, being confined to parts of the African continent, but are now known to cause considerably more morbidity than once was thought; others, such as *D. perstans* and *Mansonella ozzardi*, are more widespread but appear to be less pathogenic.

5.46 Control activities are being undertaken or planned in the majority of endemic areas in the South-East Asia Region. In Burma, the programme concentrated on vector control. In India, special filariasis field training centres have been established by the National Institute of Communicable Diseases. WHO is also assisting the Government of the Maldives, where the incidence of Bancroftian filariasis is relatively high. In Sri Lanka, steps are being taken to expand the activities of the vector control project to cover the whole of the municipal area of Colombo. Mass treatment was provided in areas where the infection rate was more than 2%. In the Western Pacific Region, the activities of the intercountry filariasis advisory team included assistance in evaluation of the mass drug administration programmes in the Gilbert and Ellice Islands and in Niue, and the conduct of a survey in the New Hebrides to determine the prevalence of filariasis before the commencement of DDT spraying for antimalarial purposes in an area where both diseases are carried by the same vector.

Research

5.47 The WHO interregional programme of field investigations on filariasis, which is based on Tonga,

¹ *Wld Hlth Org. techn. Rep. Ser.*, 1974, No. 542.

has continued its study of vectors of filariasis in the South Pacific in Tonga, Wallis and Futuna Islands, Western Samoa and the New Hebrides. The Department of Medical Entomology, Johns Hopkins University, Baltimore, Md., USA, after establishing a subcolony of an autogenous species from Tonga belonging to the *Aedes (Stegomyia) scutellaris* subgroup (its taxonomic status is being investigated by the Smithsonian Institution, Washington, D.C.), undertook cross-breeding experiments with a Samoan strain of *Ae. polynesiensis*. A one-directional compatibility was observed which suggests evidence of cytoplasmic factors for sterility that might be useful in the control of members of the *Ae. scutellaris* complex.¹ Cross-breeding experiments were also undertaken by the Sub-Department of Entomology, Liverpool School of Tropical Medicine, United Kingdom, in attempt to transfer the refractory gene of *Ae. malayensis* to *Ae. polynesiensis* and *Ae. pseudoscutellaris*.

5.48 The Department of Parasitology, Institute of Medical Science, Tokyo, has screened a number of cyclic organophosphorus esters, one or two of which appear to be effective microfilaricides in primary screening with the filaria *Litomosoides carinii* in the cotton rat but were not effective against the adult worm. The same institute is also studying the mode of action of diethylcarbamazine and postulates that the susceptibility of microfilariae to this compound is dependent on a physiological or immunological character of the hosts. Following primary screening with *L. carinii*, the WHO Collaborating Centre for the Filarioidea, London, is comparing the activity of new compounds with diethylcarbamazine and antropol in cats and gerbils with *Brugia* infections and in mosquitos against the developing stages. This Centre is also studying the effect of ionizing radiation on filarial larvae and attempting to vaccinate animals with an attenuated infective form. A further laboratory model has been developed by the National Museum of Natural History, Paris, where *Aedes* species have been infected with *Dipetalonema dessetae* and the infection has been easily passed to the rodent *Proechymis guyanensis*, which breeds well in the laboratory.

Trypanosomiasis

African trypanosomiasis

5.49 *Epidemiology and control.* Sleeping-sickness, a continuous threat to the health of some 35 million

people in Africa, remains a serious obstacle in the development of 6 million square kilometres of fertile land. Focal outbreaks have again been reported during 1974, leading in some instances to depopulation of villages. A particularly difficult situation has developed south of the Sudano-Sahelian zone; drought has driven people to the more fertile areas which had previously been abandoned because of trypanosomiasis and these new settlers will again be exposed to the risk of the disease. WHO provided assistance in analysing specific epidemiological situations in the Central African Republic, Gabon, Zaire and Zambia. In the Southern Sudan an increase of trypanosomiasis occurred following large-scale movements of population; with the assistance of the Office of the United Nations High Commissioner for Refugees, the Organization is reassessing the magnitude of the problem and preparing a comprehensive control programme.

5.50 In the majority of endemic areas in Africa, the risk of acquiring the disease is likely to remain for many years, as there is no practical method for its total eradication. The results of apparently technically sound operations tend to fall short of expectations owing to the difficulty of maintaining an adequate follow-up; hence the Organization recommends that targets for control operations be realistically adjusted, in the light of the recognized limitations of the rural health services and the facilities they can provide. An informal joint FAO/WHO meeting of experts was held in October in Geneva to study the practical implications of this, and various methods for epidemiological surveillance, vector control and treatment were selected for comparison under field conditions.

5.51 With regular medical surveillance, the human reservoir of infection, which is particularly important in the case of *Trypanosoma gambiense*, can be maintained at a reduced level. A further advantage of this is that infections can be prevented from running their full course; at the late stage of the disease successful treatment is much more difficult. For the purpose of improving surveillance methods, the Organization provided support for the development of simple diagnostic tests, mainly serological methods, that would be suitable for field use in rural health centres. One such test that is rapid and requires little equipment is the capillary indirect haemagglutination technique developed at the Ecole de Santé publique, Brussels.

5.52 With respect to treatment, the WHO Collaborating Centre for Trypanosomiasis at the East African Trypanosomiasis Research Organization, Tororo, Uganda, fulfils, among other things, an essential role in maintaining a bank of cryopreserved trypanosomes, thus providing the means for observations of the

¹ Hitchcock, J. L. & Rozeboom, L. E. (1973) *Bull. Wld Hlth Org.*, **49**, 367-370.

development of drug-resistant strains in various parts of Africa. During the year this laboratory enlarged its well-documented collection of strains with 50 additional samples.

5.53 In cooperation with the International Scientific Council for Trypanosomiasis Research and Control, WHO is studying the problems of mapping the prevalence and geographical extent of the disease in the countries of Africa and the distribution of the vector and the methods whereby such information may be regularly kept up to date.

5.54 *Research.* With WHO support, progress was made during the year in the search for a suitable animal model for trypanosomiasis research; at the University of Kinshasa *Trypanosoma gambiense* was successfully adapted to rats, in which chronic infections lasting several months developed. At the chronic stage evident nervous symptoms occurred and histopathological lesions developed similar to those seen in man. Further investigations with *Trypanosoma* are being made in collaboration with the WHO immunopathology laboratory at the University of Geneva (see paragraph 8.2). Following on a course on the immunopathology of parasitic diseases organized at that university in conjunction with WHO, steps have been taken to organize a network of collaborating laboratories in Africa and Europe to carry out further immunopathological studies on material from sleeping-sickness patients.

5.55 Immunological research in trypanosomiasis is dealt with at greater length in Chapter 8, but it may be mentioned here that the preliminary results of studies at the WHO Collaborating Centre for Immunoglobulins in Lausanne, Switzerland, indicate that the sequence of antigenic variation in trypanosomes may be rather less predictable than has generally been assumed; this lends support to earlier suggestions that a given trypanosome population in the blood is made up of different variants at the same time.

American trypanosomiasis

5.56 *Epidemiology and control.* American trypanosomiasis (Chagas' disease) is widespread in Middle and South America, causing the disablement of thousands of people, including young adults, and necessitating much hospitalization. Epidemiologically, the disease is closely associated with low standards of living and poor sanitary education. In addition to vector control work in Venezuela (see paragraph 6.6), the Organization, with the assistance of a contribution to the Voluntary Fund for Health Promotion from the Edna McConnell Clark Foundation, USA, has begun studies in Brazil to measure the effect of simple

housing improvements on the transmission of Chagas' disease. Another objective of these field studies is to develop and standardize an appropriate methodology for determining changes in the transmission rate of the disease. The WHO programme on American trypanosomiasis lays increasing stress on close integration of the clinical, vector control and epidemiological surveillance aspects.

5.57 *Research.* Results from the University of Buenos Aires, where chemically attenuated organisms were used, and from the College of Veterinary Medicine, Athens, Ga., USA, with irradiated organisms, suggest the possibility of vaccine development; this work is being followed up with WHO support. In the field of chemotherapeutic research, *in vitro* screening methods were applied to experimental nitrofurans compounds; some of these have shown promise and clinical trials are envisaged in the near future. At the Institut Gustave-Roussy, Villejuif, France, studies on the kinetoplast DNA of *Trypanosoma cruzi* promastigotes were carried out to elucidate the fundamental function of this DNA, and thereby to provide indications for a rational approach to research on chemotherapeutics for trypanosomiasis; it could be demonstrated that diamidines in some way arrest the replication process of DNA molecules.

Leishmaniasis

Epidemiology and control

5.58 As the health service infrastructure necessary for the detection of leishmaniasis is lacking in the majority of endemic areas, it is difficult to assess with any accuracy the importance of leishmaniasis as a world health problem. Kala-azar (visceral leishmaniasis) and muco-cutaneous leishmaniasis are killing diseases, often first causing long periods of disablement and hospitalization, and therefore constitute an obvious health problem. The cutaneous form, on the other hand, does not usually affect health so seriously—although it does affect individual well-being, particularly in the case of women in traditional societies, for whom it can represent a devaluation of life of the same order as crippling or blindness. The lack of prevalence data and the less obvious threat to health of the cutaneous form may explain why, in some countries with a considerable leishmaniasis problem, the efforts made by the governments are disappointing and why even in endemic areas drugs for the treatment of cases may be lacking.

5.59 There is a general increase in the spread of the disease, for instance in Africa; recent reports of leish-

maniasis in patients in South Africa and Zambia—where it is not commonly recorded—point to the potential danger of the disease in the south of that continent. In Sudan, where 1693 cases of visceral leishmaniasis were recorded in 1973, there were 3293 cases reported in the first quarter of 1974, probably as a result of man-to-man transmission. It is thought that the high number recorded may reflect greater alertness, resulting from the 1973 outbreak. The Organization assisted in studying the epidemiology of the disease in the Upper Nile Province and in drawing up a control programme.

Research

5.60 Further to experience already gained in Israel and USSR with respect to cutaneous leishmaniasis, recent experimental work assisted by WHO on *Leishmania donovani* infections at the Institute of Parasitology in Rome and the University of Shiraz, Iran, has shown that immunizing agents may show promise in the prevention of kala-azar as well.

5.61 Immunological research in leishmaniasis is reported in Chapter 8. The demonstration of the “capping” of surface antigens referred to in paragraph 8.17 is an important finding that opens up new lines of research on the parasite’s susceptibility to phagocytosis; this work also suggests the possibility that the immunopathological lesions in leishmaniasis (and perhaps in malaria, trypanosomiasis and schistosomiasis as well) occur as a result of antigen-antibody complexes shed from the surface of parasite cells.

5.62 The WHO Collaborating Centre for Leishmaniasis in Jerusalem continued to enlarge its collection of *Leishmania* stabilates with new isolates from the Americas, Asia and France. The Centre designed improved methods of preservation and further refined its recently developed method for identifying strains that is based on the antigenic characterization of excretion factors.

5.63 At the Liverpool School of Tropical Medicine, United Kingdom, progress was made in differentiating *Leishmania* species by biochemical methods such as the electrophoretic characterization of isoenzymes.¹ At the same school, in collaboration with the University of Amsterdam, the Free University at Brussels, and the Molteno Institute, Cambridge, United Kingdom, species-specific kinetoplast DNA characteristics were identified for species differentiation by estimating buoyant densities and using standard complementary RNA preparations. An additional means of differen-

tiating *Leishmania* species according to morphological differences revealed by electron microscopy was also developed at Liverpool; an interesting observation was the discovery of persistent virus-like particles in a strain in *L. hertigi*.

Amoebiasis

5.64 Amoebiasis is a worldwide infection of which the host-parasite relationship remains a subject of controversy, some holding the view that *Entamoeba histolytica* is a common commensal that may become a pathogen in various circumstances, others maintaining that it is always pathogenic. The results of clinical studies carried out by the Institute of Gastroenterology, Belgrade, and stimulated by WHO lend support to the latter view. Screening of a large number of patients by stool examination, rectoscopy, irrigo-radioscopy and histopathological examination of biopsy material provided suggestive evidence that even apparently asymptomatic carriers of *E. histolytica* had histological lesions of the intestinal mucosa and liver. The Institute has initiated a joint investigation by clinicians, immunopathologists and biochemists into the consequences of amoebiasis of the intestinal tract in cases with and without clinical signs.

5.65 The Amoebiasis Diagnostic and Research Unit, St Giles’ Hospital, London, received support for a comparative evaluation study of serological methods, including the haemagglutination test, in amoebiasis. The gel-diffusion precipitation method was found to be the most reliable for indicating active invasive amoebiasis, and the fluorescent antibody test to be a sensitive method for use in areas of low endemicity. The indirect haemagglutination test was the most consistent and seems applicable in prevalence studies of infection, but is of little clinical use as positivity may merely indicate a past infection.

Mycotic and miscellaneous infections

5.66 The Organization continued to assist a certain number of research undertakings in mycology, among them being epidemiological studies of sporotrichosis around Lake Ayarza, Guatemala, and in Mexico, that are carried out by the Mycology Service of the Institut Pasteur, Paris. These studies have confirmed that around the lake all individuals found infected had had previous contact with lake water or with fish from the lake. Although it was not possible to isolate *Sporotrichosis schenckii* from either the fish or the water, the epidemiological indications on the mode of transmission are clear.

¹ Gardener, P.J. et al. (1974) *Ann. trop. Med. Parasit.*, **68**, 317-325.

5.67 Many reports from central laboratories and surveys of parasitic diseases published during the year or received by the Organization have indicated continuing high prevalences of intestinal helminthiases in different parts of the world; nevertheless, control of this group of infections still receives a relatively low priority in public health programmes. However, surveys on intestinal parasitism were intensified in Guam with WHO's assistance, and in a few other countries considerable efforts are being made to assess the problem and devise appropriate control

methods with WHO's advice, usually as part of the general health measures taken to protect autochthonous and migrating populations in areas earmarked for specific economic development projects. Apart from programmes designed to improve environmental conditions by sanitary engineering methods, great attention is being paid to the possibilities now offered for control by broad-spectrum anthelmintics, and results from clinical drug trials are kept under continuous review by the Organization.

6. VECTOR BIOLOGY AND CONTROL

6.1 During the past 30 years, notable successes have been achieved in the control of louse-borne typhus, plague, relapsing fever, leishmaniasis, vectorborne encephalitis, dengue haemorrhagic fever, yellow fever and malaria. This has been due in large measure to the use of DDT and other residual insecticides at a cost within the reach of most of the countries concerned. The control of virtually all vectors and some reservoirs of human disease continues to depend on pesticides, but the problems to be solved are becoming ever more complex owing to the development of resistance to pesticides by many vectors and by some reservoirs of disease, such as rodents. There is also some evidence of increased tolerance on the part of intermediate hosts, such as the tolerance of molluscicides by snails. At the same time the possible pollution of the environment by a number of chemicals is a matter of growing concern. Furthermore, the higher cost of new insecticides might prevent their use by many of the countries that most need them.

6.2 To achieve effective control of insecticide-resistant species and to prevent or minimize the contamination of the environment, the search continues for new insecticides and more refined methods of chemical control and for practical alternatives to these techniques, such as environmental, biological, and genetic methods of control. Effective vector control today requires the application of a number of specialized disciplines such as entomology, medical zoology, chemistry, toxicology, genetics, and engineering. Ecological studies are essential to determine the relationships between the vector, the pathogen, man, and the reservoir and thus to determine the choice of the most appropriate control method. A thorough knowledge of the bionomics, behaviour, and population dynamics of the vector species is fundamental to the successful use of any biological or genetic control technique. Standard methods are being evolved to monitor the abundance of important vectors of disease, and the data collected all over the world are now contributing to the Organization's programme of epidemiological surveillance.

6.3 The vector biology and control programme—in which an important element is the evaluation of various vector control methods in the field by WHO research

units—is aimed at solving these problems. A multidisciplinary approach is being pursued and has yielded promising results. The implementation of the onchocerciasis control programme in the Volta River basin in West Africa is a good example of this approach (see below, and paragraphs 5.37-5.38).

Applied ecology

6.4 Field investigations have been pursued on *Aedes aegypti*, *Culex tritaeniorhynchus*, *C. pipiens fatigans*, *Anopheles gambiae*, *An. funestus*, *An. stephensi*, and *An. aconitus* in several climatic zones to determine their population dynamics and ecological features, which are important for the chemical, biological, and genetic control of these important vectors of arbovirus diseases, filariasis, and malaria. Detailed studies were carried out in West Africa, India, and Indonesia on *Ae. aegypti*, in Indonesia and the Republic of Korea on *C. tritaeniorhynchus*, in India and Indonesia on *C.p. fatigans*, in tropical Africa on *An. gambiae* and *An. funestus*, in India on *An. stephensi*, and in Indonesia on *An. aconitus*.

6.5 The WHO Vector and Rodent Control Research Unit in Indonesia conducted investigations on the ecology and control of *Culex* vectors of Japanese encephalitis and *Anopheles* vectors of malaria at a field station in western Java, and initial surveys were carried out in Semarang, Java, in preparation for the establishment of a subunit there for trials of residual insecticides against malaria vectors.

6.6 The WHO Chagas' Disease Vector Research Unit in Acarigua, Venezuela, carried out ecological and distribution surveys of the domestic, peridomestic and wild vectors and reservoirs of Chagas' disease in its nearby study areas. Several new records for the country of both Triatominae and rodents were established, and intensive studies have been carried out to develop a reliable method of monitoring Chagas' disease vectors, particularly *Rhodnius prolixus*. All facets of the complex reservoir-vector-man relationship were investigated in one area where the common opossum, *Didelphis marsupialis*, appears to constitute

the main natural reservoir for *Trypanosoma cruzi*, the parasite causing Chagas' disease.

6.7 The investigations being made in six countries of West Africa on the feral vectors of yellow fever have been expanded with the aim of developing a better method of monitoring the populations of *Ae. africanus*, *Ae. luteocephalus*, *Ae. metallicus*, *Ae. simpsoni*, *Ae. vittatus*, and the *Aedes* of the *taylori-furcifer* group. Studies were also initiated on the monkeys and other wild mammals suspected of constituting the natural yellow fever reservoir in those countries. These investigations may eventually result in a major improvement of the epidemiological surveillance network, while also establishing a sound basis for the control of the vectors.

6.8 Laboratory and field techniques for evaluating the effects of larvicide applications against *Simulium* on the aquatic ecosystem and on the biological productivity of the river systems treated are being developed as an integral component of the onchocerciasis control programme in the Volta River basin. These investigations will provide an accurate assessment of the ecological impact of the public health use of pesticides. Similar studies are planned for control operations against *Glossina*; field trials are being conducted with organophosphorus, carbamate, and other insecticides that do not have the highly persistent properties of DDT, dieldrin, and other chlorinated hydrocarbon compounds.

6.9 Biological control methods based on the inundative release of living organisms could create even greater environmental contamination problems than those created by pesticides. Ecological studies are in progress to assess the nature and magnitude of the risks involved before carrying out any field trials with new biological control agents (see paragraph 6.28).

6.10 The observations, conclusions, and recommendations of the Scientific Group on Ecology and Control of Rodents of Public Health Importance, held late in 1973, which have now been published,¹ constitute an up-to-date basis for ecological studies such as those being conducted at present in central Java on the ecology of sylvatic plague in a tropical focus. The Republic of Viet-Nam also received assistance to investigate the ecology and control of plague-transmitting rodents.

Resistance to insecticides and rodenticides

6.11 During the year under review, all the most recently available data on the resistance of anopheline mosquitos to insecticides were added to the WHO computer data bank. The development of DDT resistance is now known to have occurred in 19 species of anophelines, including formidable disease vectors such as *An. culicifacies*, *An. stephensi*, *An. albimanus*, and the *An. gambiae* complex; 39 species of anophelines, including all but two of the species that have developed DDT resistance, have also developed resistance to dieldrin. Some, indeed, show multiple resistance; for example, *An. albimanus* in Central America has over the years developed resistance to DDT, dieldrin, malathion, and—in two countries—propoxur. Other areas in which the development of resistance presents problems include Java, Indonesia, where there has been a spread of double resistance to DDT and dieldrin in the principal malaria vectors, *An. sundanicus* and *An. aconitus*, and India, where double resistance in *An. stephensi* and *An. culicifacies* in certain areas has led to the use of malathion, although recent reports indicate the development of malathion resistance by the latter species in the Thana District of Bombay State.

6.12 In tropical Africa, difficulties due to double resistance in *An. funestus* and in *An. gambiae* species A and B are compounded by the absorptive properties of the walls of the mud huts in the drier regions. Hence the importance of evidence coming from a large-scale trial in western Kenya pointing to the effectiveness in this area of residual sprays of the organophosphorus compound fenitrothion (see paragraph 6.20).

6.13 The problem of the development of resistance to insecticides used in residual house sprays to combat malaria has led to increased interest in the larvicidal control of anophelines. In Jordan, however, a tenfold increase in tolerance of the larvicide ABATE has already been noted in *An. sergenti*. Similar increases in larval tolerances of malathion and/or fenthion have been noted in the potential vector *An. maculipennis* in Romania and in *An. sinensis* in Japan (Ryukyu Islands) and the Republic of Korea. Tolerance of ABATE by *An. culicifacies* and *An. gambiae* has been reported from Dubai, United Arab Emirates, and Lagos State, Nigeria, respectively. Resistance to this larvicide has also been reported in *Ae. aegypti* in Guatemala and *C. p. pallens* in Japan, as well as in *C. p. molestus* in Israel, where Dursban has consequently been introduced.

6.14 A questionnaire inquiring into the nature of schemes for insecticidal control of disease vectors,

¹ *Wld Hlth Org. techn. Rep. Ser.*, 1974, No. 553.

the development of resistance in these vectors, and the effect of any such resistance on their control and the extent of disease was sent to more than 200 health authorities throughout the world. The replies to the questionnaire have been analysed to determine the impact of insecticide resistance on the control of vectors and vector-borne diseases, and the findings are being prepared for publication. The last survey of this nature was carried out five years ago.

6.15 A number of collaborating laboratories are studying the effect of applying selective pressure by new insecticides to a number of species of mosquitos—*An. albimanus*, *An. gambiae* (species A and B), and *An. stephensi*—to determine the speed and degree of development of resistance under laboratory conditions. Field populations under pressure are also being investigated—for example, in Kisumu, Kenya, where fenitrothion is being applied against *An. gambiae* (see paragraph 6.20).

6.16 Some populations of three of the most common and harmful rodent species, *Rattus norvegicus*, *Rattus rattus*, and *Mus musculus* are now resistant to anti-coagulant rodenticides in several parts of Europe and the USA, where these poisons have been used routinely for a number of years. During the year, there has been a considerable extension of anti-coagulant resistance in *Rattus norvegicus* in Europe and the USA, and there is some evidence that rats have developed similar resistance in Kuwait.

Evaluation of new insecticides and chemical control

6.17 The testing of new insecticides for possible use in vector control was continued in collaboration with six WHO collaborating laboratories and four field research units. During the year, 29 compounds were tested in Stage I¹ trials and 11 of them underwent further testing at Stages II and III. Most of these were recommended for Stage IV tests on one or more vectors. The number of new compounds submitted is rather low but reflects the trend in recent years on the part of pesticide manufacturers to produce fewer new compounds. However, a number of these new compounds entering the programme are accompanied by sufficient preliminary data to permit evaluation tests to be made simultaneously at several stages. A new growth-regulator compound and several synthetic

pyrethroids are in this category. These compounds were tested at some of the field research units at the time that laboratory assessments were being made (see paragraph 6.22).

6.18 The research carried out in 1973 on the physical properties of the emulsion concentrate formulation of ABATE for use against *Simulium* larvae has now resulted in the preparation of interim specifications of ABATE emulsion concentrate for *Simulium* control, which have been used for the procurement of the larvicide for the onchocerciasis control programme in the Volta River basin. This research, conducted by the Center for Disease Control, Atlanta, Ga., USA, (in its capacity as a WHO Collaborating Centre) and the Onchocerciasis Service of the Organization for Coordination and Cooperation in the Control of Major Endemic Diseases (OCCGE) at Bouaké, Ivory Coast, has continued with the testing of three insecticides formulated to meet the requirements for aerial application to rivers in Ivory Coast. These tests have also been applied to new formulations of ABATE developed by the manufacturers with guidance from the centre at Atlanta. The research is aimed at improving the type of formulation to be used and at finding alternative materials for use in case of development of resistance to ABATE.

6.19 Larvicides can be applied to river systems only if they are safe to non-target organisms and if they are readily degradable. Methods of sampling and analysis for use in monitoring larvicides in rivers are being developed with the help of the Atlanta centre. In September, WHO convened a Scientific Group on Chemical and Biochemical Methodology for the Assessment of Hazards of Pesticides for Man to review the problems of analysis and to recommend research projects that will help in the elaboration of this part of the programme.

6.20 A Stage VII trial is being conducted, with USAID support, by the WHO *Anopheles* Control Research Unit No. 2, Kisumu, Kenya, in an area inhabited by about 50 000 people, to evaluate the effects on malaria transmission of fenitrothion applied as a residual spray inside houses every three months. The results of the first six rounds of insecticide application have been encouraging, with the densities of *An. gambiae* and *An. funestus* being reduced to a very low level except for a short period during the peak of the rainy season in May. Near Kaduna, Nigeria, an extended Stage V trial has been carried out to compare in two groups of villages the effectiveness of fenitrothion and Landrin against malaria vectors, when applied every three months as residual sprays inside

¹ The stages in the evaluation programme are: Stage I, initial screening tests; Stages II and III, laboratory and simulated field tests; Stage IV, field tests; Stage V, village-scale trials; Stage VI, operational field trials; Stage VII, large-scale epidemiological trials.

houses. Both compounds have given good control of *An. gambiae* and *An. funestus*. The evaluation is nearly completed and will soon be followed by a comparative evaluation of fenitrothion and chlorphoxim.

6.21 An ultra-low-volume application of naled by helicopter against *C. tritaeniorhynchus* in the Republic of Korea reduced the population of mosquitos by about 70% for three days.

6.22 Two compounds with insect growth regulating activity were evaluated as larvicides in Indonesia (*Culex*), Nigeria (*Anopheles*), and the Republic of Korea (*Culex*). A special evaluation procedure had to be developed to determine both the direct lethal effect of the chemicals and their effect on normal growth and emergence of the target species. One (a dodecadienoic acid derivative) prevented the emergence of adults; the other (a substituted urea) was larvicidal as well. The use of insect growth regulators in fresh and polluted water has shown considerable promise for the control of mosquito larvae, with little or no effect on non-target organisms.

General vector control activities

6.23 The WHO Expert Committee on Insecticides (Ecology and Control of Vectors in Public Health), which met in October, examined the impediments to further progress in the control of vectorborne diseases, including the development of resistance to pesticides, the lack of sufficient ecological information that would permit the highly selective application of pesticides, the greatly increased cost and short supply of pesticides, the lack of adequate funding and trained national professional staff, and the inadequate exchange of information. The Committee stressed the importance of carrying out detailed cost/benefit studies in seeking funding, of encouraging further insecticide development, and of developing alternative methods of control.

6.24 In response to a questionnaire on municipal vector control services sent through WHO Representatives to a large number of local authorities, replies were received from almost 200 communities of 100 000 or more population in tropical and subtropical countries. Analysis of the replies has confirmed that, owing to inadequate training and supervision, the results of municipal control campaigns involving

large quantities of insecticides are usually not commensurate with the considerable sums expended.

6.25 In the African Region, assistance was given in the promotion of vector control sections in several national epidemiological services, and a number of candidates were recommended for training in vector control, particular emphasis being placed on *Simulium*, tsetse, and mosquito control. In the Region of the Americas, the Organization continued the campaign to eradicate *Ae. aegypti*, through advisory assistance to Member States. By mid 1974, 8.4 million km² of the originally infested area of 11.8 million km² continued to be free of this vector mosquito. The remaining 3.4 million km², representing 33 countries and territories, still have infested areas; 28 of these 33 have active eradication campaigns, some in an advanced phase, and low infestation rates. Increasing emphasis was placed on the surveillance and control of *Ae. aegypti* in the Western Pacific Region, too, owing to new outbreaks of dengue haemorrhagic fever in Nauru, Tonga, and the Trust Territory of the Pacific Islands, as well as in Peninsular Malaysia and the Republic of Viet-Nam. Reference has already been made (paragraph 4.51) to the establishment of the interregional Technical Advisory Committee on Dengue Haemorrhagic Fever, which prepared technical guides, including one on the surveillance and control of the vector. Iraq, Jordan, and Qatar in the Eastern Mediterranean Region were assisted in measures for the control of rodents, flies, and mosquitos.

Equipment for vector control

6.26 Development trials of a fast insecticide-release system for aircraft were successfully completed in West Africa in preparation for the aerial application of insecticides to rivers in the onchocerciasis control programme (see paragraph 5.37 et seq.). Trials of a new molluscicide applicator for large water bodies were carried out in Ghana. A new ultra-low-volume knapsack mist blower was sent to field research units in Africa and Jakarta for trial. In Jakarta the device was used against *Ae. aegypti* in a suburb of the city, malathion and fenitrothion being applied to houses and their surroundings; approximately 60-70% control of mosquitos was obtained for five days.

6.27 As there have been many developments since 1964, when the manual *Equipment for Vector Control* was first published, a second edition has now been issued which contains up-to-date information on

the various types of equipment and components used in vector control, a discussion of the principles of pesticide application, a complete set of WHO specifications for control equipment, and a new section devoted to the use of aircraft.¹

Biological control

6.28 Considerable concern has been expressed about the safety of microbiological control agents, especially viruses, and the programme is being expanded to determine the potential hazards that may be created by the extensive use of viruses for arthropod control. An appropriate scheme for the sequential testing of each category of biological control agents is being developed in collaboration with suitably equipped laboratories, institutions, and field research units. The first stage of the evaluation scheme involves the characterization of the agent, its assessment against target organisms, and a study of possible rearing methods. The next stage is the laboratory determination of the hazards created by the agent for non-target organisms, including man, and of the probable stability and reproductive potential of the agent in natural environments. Review and discussion of the data derived from these investigations will allow the planning of small-scale field trials under natural conditions and with appropriate safety testing. The successful accomplishment of these tests would pave the way to trials on a larger scale. However, preliminary field trials under strictly controlled conditions and complementary laboratory investigations dealing with non-target organisms from the proposed large-scale trial area will first be undertaken.

6.29 Preparations are being made for a small-scale field trial of two very promising agents, *Metarrhizium anisopliae* and *Bacillus sphaericus*, against malaria vectors in Nigeria. Protocols are being developed, and inventories of aquatic life in the trial area are being made to provide baseline data for evaluating the effect of these two agents on non-target species.

6.30 Field trials have been carried out in Nigeria with two local species of larvivorous fish, *Epiplatys bifasciatus* and *Aphyosemion gardneri*, to investigate their bionomics and their effectiveness against *An. gambiae* and *An. funestus* larvae in man-made and natural environments under the conditions of different predator/prey relationships. Questionnaires have been sent to national specialists in mosquito control all

over the world to make an updated inventory of the present conditions of the use and effectiveness of larvivorous fish.

6.31 In close cooperation with a research group at the Memorial University of Newfoundland, Canada, which is developing biological control methods against *Simulium*, WHO is investigating the possibility of using these biological control agents against tsetse flies.

Genetic control

6.32 At the Research Unit on the Genetic Control of Mosquitos, New Delhi (jointly sponsored by WHO and the Indian Council of Medical Research), experiments were started for the first time with an "integrated strain" of *Culex fatigans* instead of sterilized mosquitos. The strain has been specially developed by genetic crossing and has cytoplasm that carries incompatibility (sterility) in crosses with the Delhi population. It also has chromosomes of Delhi origin, including a translocation that causes about 65% sterility in matings within the strain. Releases of these mosquitos in villages around Delhi brought about a maximum level of sterility of 50-68% among the egg rafts laid by the wild females. There was also some evidence that this level of sterility accelerated the natural seasonal decline in the mosquito populations in the villages. A higher degree of suppression was not achieved because of the infiltration of mosquitos from adjoining areas. Studies are being made of the special problems of elucidating *C. fatigans* ecology in urban areas.

6.33 Experiments have also been carried out in the laboratory to determine whether a wild *C. fatigans* population could be completely replaced by a population of incompatible cytoplasmic type if a sufficient majority of the latter were released. One way in which this technique might be used would be to replace a vector population by a strain carrying a gene for non-susceptibility to *Wuchereria bancrofti*. An attempt to select such a gene from wild populations of *C. fatigans* is in progress.

6.34 Ecological studies in the town of Sonapat, near Delhi, have revealed that *Ae. aegypti* breed throughout the year, mainly in domestic water containers, and that there is no population of this species in the surrounding rural areas. This town has therefore been chosen as a suitable site to test the feasibility of suppressing or eradicating the mosquito population by genetic techniques. Intensive studies are being carried out to delineate the seasonal trends of the

¹ World Health Organization (1974) *Equipment for vector control*, 2nd ed., Geneva.

uncontrolled *Ae. aegypti* population, in order to provide a standard of comparison for the effects of a release programme in 1975. Studies are also in progress on the release procedure necessary to ensure adequate dispersal throughout the town of this rather sedentary species, and mass-rearing procedures have been developed based upon those successfully used for *C. fatigans*.

6.35 In view of the resistance by *An. stephensi* to several insecticides and of the recrudescence of malaria in urban areas, the unit in Delhi is investigating the possibility of the genetic control of this vector also. A colony of *An. stephensi* has been established in the laboratory and techniques for mass rearing are under study.

Vector control in international health

6.36 The Twenty-seventh World Health Assembly approved the eighteenth report of the Committee on International Surveillance of Communicable Diseases (see paragraphs 4.18-4.19). In the section dealing with vector control in international health, the Committee's report recommends that Member States should immediately accept the disinsection of aircraft by the dichlorvos vapour system. It also urges civil aviation authorities to permit, within the conditions specified by ICAO, the installation and use of this system and to cooperate with the aircraft and airline industries in facilitating such installation and use.

The safe use of pesticides

6.37 As part of the long-standing studies on the safety of insecticides used for public health vector control, the large-scale trial of fenitrothion carried out near Kisumu, Kenya, provided an excellent opportunity to verify under operational conditions the need for the precautionary measures recommended. In 1974, as in 1973, no complaints attributable to exposure to the insecticide were recorded either among the spraymen or among the 50 000 inhabitants whose homes were repeatedly sprayed. The cholinesterase activity of the spraymen was determined weekly, using the tintometric method, and in spite of the protective clothing worn and the facilities provided for washing and taking showers, marked cholinesterase depression was noted in several workers, especially during one spray round when the formulation of fenitrothion caused frequent blockage of nozzles, which the

spraymen had to clear. Spraymen with cholinesterase depression were released from spraying duties to allow cholinesterase recovery. It seems that regular monitoring of cholinesterase activity in spraymen will be needed whenever the application of fenitrothion is continued for more than one month, and this may apply also to some other organophosphorus residual sprays now taking the place of DDT for use indoors.

6.38 A field kit is being developed to measure cholinesterase with more accuracy than is now possible. The basic instrumentation has passed through laboratory and simulated field trials with fenitrothion. Subsequently it is hoped to expand the kit to provide field measurement of exposure to other hazardous pesticides.

6.39 In continuation of the survey of the effects of long-term exposure to DDT, an attempt is being made to enlarge the group of persons who have undergone such exposure. A suitable group of spraymen has been identified in Mexico, whom it is hoped to add to those already under surveillance in Brazil and India.

6.40 One of the problems in the prevention of poisoning from the use of toxic pesticides in tropical countries is the provision of protective clothing suited to the climate. With the aim of ultimately being able to define minimum effective standards of protection, WHO is promoting epidemiological surveys of the methods of protection now in use and their effects. Since the pesticides themselves and their methods of use in agriculture are diverse, the aim will be achieved only through the integration of data from a number of surveys. So that the surveys can be carried out on a national basis and subsequently published, a basic protocol for such studies has been developed.

6.41 In late 1971 and early 1972, there was an outbreak of organomercury poisoning in Iraq due to the consumption on a wide scale of treated seed grain. The outbreak resulted in the death of several hundred persons and illness in several thousand, some of whom have been permanently disabled. An epidemiological study of the effects of the outbreak has been made by WHO and the Ministry of Health. A great deal of clinical and scientific work was carried out in Iraq with international and bilateral assistance, and the results were discussed at a conference on intoxication due to alkylmercury-treated seed, organized in cooperation with SIDA and the Government of Iraq and held in Baghdad in November. The conference was attended by 14 WHO-supported participants from 9 countries and by observers from 11 countries.

6.42 Earlier, with the aim of preventing similar outbreaks (several of which have occurred on a smaller scale in the past in Iraq and other countries), a joint FAO/WHO meeting on the use of mercurial and alternative compounds as seed dressings was held in Geneva in March. After reviewing outbreaks of

poisonings associated with dressed seed, the meeting considered the agricultural and toxicological aspects of mercurial and non-mercurial dressings and made a number of recommendations on safety measures.¹

¹ *Wld Hlth Org. techn. Rep. Ser.*, 1974, No. 555.

7. NONCOMMUNICABLE DISEASES

7.1 It is the noncommunicable diseases that cause the greatest burden of ill-health and the most deaths in the better-developed countries, and their impact on the level of health in many developing countries is rapidly increasing. The considerable volume of information on various aspects of these diseases that has come out of studies conducted by WHO in collaboration with national scientific centres and institutes is gradually being used for the planning and organization of comprehensive services, either in pilot areas or at different administrative levels according to national circumstances.

7.2 This comprehensive type of WHO programme is rather more advanced in respect of cardiovascular diseases for a number of reasons, not least among them being the excellent cooperation and coordination that have been achieved with nongovernmental organizations active in this field. Various studies are proving the possibility of influencing risk factors and, by intervention, reducing morbidity and mortality, although it is admittedly still a very difficult and complex task adequately to assess the interplay of the factors involved.

7.3 Atherosclerosis is a case in point. It is known that this condition is associated with the influence on metabolism in early childhood of various factors and that the pattern of risk becomes progressively unfavourable with increasing age. It is evident, therefore, that true primary prevention of atherosclerosis and coronary heart disease is to be achieved by the adoption of living habits favourable to health from early childhood. The WHO-assisted pilot study on this, that began in 1973 in the Netherlands,¹ was reviewed during the year to consider its possible extension to other parts of the world.

7.4 Changing the habits of the child and his family to ensure that their nutrition is adequate rather than inadequate (quantitatively and qualitatively), and to persuade them away from inactivity to physical exercise and from smoking to not smoking, and treating hypertension where it exists, will obviously improve their health in many other ways as well. This elementary principle is being increasingly recognized by the

implementation of simple measures at the local level, with less emphasis on the difficulties involved.

7.5 During 1974, the tendency to widen the scope of WHO-assisted preventive and control programmes, and to adapt the health services of countries to deal with the noncommunicable diseases, increased. In some countries specialized outpatient services have been developed not only for cardiovascular diseases, cancer and mental disorders, but also for diabetes, chronic respiratory diseases, kidney diseases, arthritis and rheumatic disorders. These services, especially when community-orientated, not only ensure the primary prevention, the early detection and treatment, and the rehabilitation of cases, but also serve a health education purpose and exert an influence on living and working conditions, which have a considerable effect on noncommunicable diseases. In addition, they are valuable for training medical and other health personnel in a different setting from the classical hospital. Such services, with a certain amount of variation, may be expected to develop fairly extensively in the years to come, and as they do so it will be important to ensure that they are closely integrated into the general health services.

Cancer

7.6 The Twenty-seventh World Health Assembly in May considered a report on the long-term planning of international cooperation in cancer research, which set out the tasks facing the Organization and indicated aims and possible priorities for research. In resolution WHA27.63 the Health Assembly requested a continuation of the work that had been started on a comprehensive WHO programme for international co-operation in cancer research and research methodology, taking into account all the sources at the Organization's disposal.

7.7 The report that the Health Assembly reviewed pointed to the need, in a long-term programme, for international cooperation on basic, environmental and clinical research and on cancer health services. The method of operation involved includes WHO's serving as intermediary or focal point for integrating the efforts of national, intergovernmental and nongovernmental organizations in cancer; the stimulation of national efforts by WHO through technical assistance and

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 4.15.

advisory services; the standardization of terminologies, classifications and methods; reviews and evaluation of the current situation in different fields of cancer; the promotion of new methods, such as immunodiagnosis, and of the practical application of research findings; and the development of skilled manpower for both cancer research and health care.

7.8 Several consultations were held in the latter part of the year to determine the approaches that should be taken for conducting reviews of developments in basic and clinical cancer research and to indicate aims and priorities. Contact has also been made with the International Institute of Applied Systems Analysis with a view to introducing a more systematic and analytic element in the Organization's cancer programme.

7.9 Chemotherapy is the treatment of choice for a number of forms of cancer, yet the full potentialities of the use of drugs have by no means all been explored. There is, for instance, a broad area of research into combinations of drugs that might make for more rational and active treatment schedules. In 1974, therefore, the Organization gave support to centres in three countries for methodological research aimed eventually at the drafting of recommendations for optimal drug combinations for use in cancers of various sites.

7.10 The empirical screening of potential anticancer drugs is a cumbersome and rather unproductive process. In September WHO convened an international conference with the support of the National Cancer Institute, Bethesda, Md., USA, in the framework of a bilateral agreement for cooperation on cancer between the USA and the USSR, at which participants from 19 countries discussed the possibilities of coordinating the primary selection of drugs for screening as antitumour agents. The successful standardization of methods for such selection should make research cheaper and more rapid, simplify comparisons, and avoid many errors.

7.11 To improve the quality and comparability of data collected in hospital-based cancer registries WHO has for some years been promoting the standardization of data-recording. During the year a trial was made with 20 000 registration cards distributed among 23 cancer institutes throughout the world. A consultation was held in December at which the results were evaluated and a registration system was agreed upon for step-by-step implementation in several cancer institutions. Consideration was also given to establishing a special registry for child patients with long survival after chemotherapy.

7.12 A new activity indirectly connected to the foregoing was started in 1974 in relation to studies on end-results in cancer. There is a need for international coordination of the efforts being made by individual groups to develop procedures for collecting and reporting information on end-results, and agreement was reached at a meeting of several workers in this field convened in Paris in June that WHO should prepare recommendations on methods for tabulating, analysing and presenting end-results. The possibility of compiling end-results information on a broad international basis was also discussed, and it was considered that as a first step WHO might encourage a few selected centres to undertake detailed end-results studies rather than try to cover large numbers of institutions and forms of cancer.

7.13 At the regional level a number of examples of assistance may be cited. In the African Region, for instance, assistance was given in the United Republic of Tanzania for cancer control in Zanzibar. In the Americas, the Organization gave support to Brazil to upgrade its cytology laboratories and training of cyto-technologists, its cancer registration system and its radiotherapy centres; to Chile and Guatemala to strengthen, respectively, the cytology teaching laboratory in Santiago and the School of Exfoliative Cytology for Central America and Panama; and to Peru in connexion with the programme for cervical and uterine cancer control in metropolitan Lima. In the South-East Asia Region, Burma was assisted in establishing exfoliative cytology services and endoscopic examination facilities, India in equipping with treatment facilities a 100-bed hospital in Kancheepuram, and Mongolia in promoting the early detection of lung cancer. Cancer control programmes were assisted in Democratic Yemen, Iran, Iraq, Israel, Libyan Arab Republic, and Tunisia, and in the last-named country a regional symposium on lymphomas, in March, highlighted the importance of this disease in Eastern Mediterranean and North African countries.

7.14 The WHO Collaborating Centre for Evaluation of Methods of Diagnosis and Treatment of Stomach Cancer, Tokyo, and the WHO Collaborating Centre for Evaluation of Methods of Diagnosis and Treatment of Female Genital Tract (Ovarian) Cancer, Leningrad, USSR, proceeded with the collection of follow-up data concerning cancers at these sites, using new registration forms elaborated in 1973 that allow for standardized recording. The WHO Collaborating Centre for Evaluation of Methods of Diagnosis and Treatment of Melanoma, Milan, Italy, further increased its registry of well-documented melanoma cases which now number more than 3000; the data are stored and processed by computer at WHO. All

clinical collaborating centres now publish quarterly reviews of literature on their respective topics which they distribute among the other centres and to other scientists and libraries.

7.15 The Organization also gave support for the collection of information on and results of the treatment of carcinomas of the uterus, vagina and ovary derived from 50 institutions and evaluated in Stockholm.

7.16 Having regard to the importance of immunology in cancer, WHO supported the elaboration of an international standard for carcinoembryonic antigen which should make the studies in this field more comparable. Further studies in this respect were supported through centres in Lausanne, Switzerland, and in London and Moscow. In addition, support was given to clinical studies on the immunology of breast cancer.

7.17 The WHO Collaborating Centre for the Nomenclature of Cytology, Geneva, concentrated upon standardization of the cytological nomenclature of extragenital sites (including lung, stomach, urinary bladder, and body fluids) and upon aspiration cytology of the thyroid, breast, prostate and lymph nodes. A meeting at which the nomenclature was agreed was held in London in November.

7.18 The Organization's programme for the histological classification of tumours continued, with further support from the National Cancer Institute in the USA through the Voluntary Fund for Health Promotion. A working group met in the spring in Geneva to discuss whether and how the histological classifications already prepared should be modified to suit the needs of paediatric pathologists, particularly in terms of their use in clinical trials and epidemiological studies, and what form a publication on the classification of tumours of childhood might take. Meetings to review histological classifications already drawn up were held by the groups concerned with upper respiratory tract tumours, endocrine tumours, and kidney and prostate tumours. The first review meeting for the histological classification of central nervous system tumours was held in Geneva in August; and in September the classification of gastro-oesophageal tumours was finalized at a meeting in Turku, Finland.

7.19 Two further volumes in the *International Histological Classification of Tumours* series were published, dealing with thyroid tumours¹ and skin

tumours.² This is a uniform series relating to the classification of tumours in man. In order to reveal similarities and differences between tumours in man and in domestic animals and so to provide a sound basis for research in comparative oncology, the Organization has also been developing an internationally agreed histological classification of naturally occurring tumours in domestic animals.³ A special issue of the *Bulletin of the World Health Organization* was published during the year containing the classifications of tumours of 10 animal body sites,⁴ and corresponding study sets of diapositives were made available for loan to recognized scientists by the WHO Collaborating Centre for Worldwide Reference on Comparative Oncology, Washington, D.C. At an informal meeting of collaborators, organized jointly with the University of Giessen, Federal Republic of Germany, in September, the classification of tumours of 11 more body sites was considered in detail.

7.20 Among a number of interesting results obtained in WHO-supported research in comparative oncology during the year, mention may be made of the following. There is increasing evidence that leukaemia/lymphosarcoma in cattle is caused by a C-type oncornavirus present in the lymphocytes and sometimes in the milk of affected cows. At the WHO Collaborating Centre for Research and Training in Comparative Medicine, Philadelphia, Pa., USA, milk from cows in which the C-type virus was present was fed to six chimpanzees from infancy and two died from leukaemia, which has not been reported previously in chimpanzees. At the Glasgow Veterinary School, United Kingdom, high levels of antibody were produced by vaccinating cats with cell cultures infected with feline leukaemia virus; challenge experiments have not yet been concluded, but indirect evidence suggests that cats with adequate antibody levels are protected against the disease. The virus contains an interspecies antigenic determinant; this has been purified and is being developed as a probe to look for related antigens in human leukaemic cells.

7.21 Studies on the carcinogenicity of bracken fern (*Pteridium aquilinum*) at the University of North Wales, United Kingdom, have shown that the plant contains at least two carcinogens, one of which has been identified as shikimic acid, a substance not uncommon in plants but not previously suspected of being

¹ Hedinger, C. et al. (1974) *Histological typing of thyroid tumours*, Geneva, World Health Organization (*International Histological Classification of Tumours*, No. 11).

² ten Seldam, R. E. J. et al. (1974) *Histological typing of skin tumours*, Geneva, World Health Organization (*International Classification of Tumours*, No. 12).

³ The classification of tumours of laboratory animals is undertaken by IARC.

⁴ *Bull. Wld Hlth Org.*, 1974, 50, 1-142.

harmful. It has proved to be both carcinogenic and highly mutagenic in mice. As it can be present in the diet of human beings, the investigation is being pursued further.

7.22 In Israel, studies of pulmonary adenomatosis in sheep have shown that a field test for hypergamma-globulinaemia is useful in detecting cases of this disease. Particles similar to murine C-type oncornaviruses were found by electronmicroscopy in the tumour tissue, and biochemical studies revealed the presence of reverse transcriptase in affected lungs, indicating the incorporation of viral genome in the DNA of the tumour cells. Collaborators in Cambridge, United Kingdom, studying the effect of immunostimulation on survival in dogs after surgical removal of malignant tumours, have found that intravenous injection of viable BCG after amputation of a limb affected with osteosarcoma has a marked beneficial effect; the study is being extended to other types of tumour.

*International Agency for Research on Cancer (IARC)*¹

7.23 The programme of the International Agency for Research on Cancer was pursued along the lines defined by its Governing Council, giving priority to research in epidemiology and environmental carcinogenesis with the aim of discovering the factors influencing the etiology of cancer in man. The scientific programme operated through 76 research agreements with national laboratories and institutions. The Agency also carried on a training programme of fellowships and courses, and a scientific publications programme.

7.24 *Cancer registries.* A questionnaire has been sent to all members of the International Association of Cancer Registries in order to collect data on all registered cases of vaginal and cervical neoplasms in females aged 0-24 years. The material thus obtained has been put at the disposal of the Registry of Clear-Cell Adenocarcinoma of the Genital Tract in Young Females, Boston, Mass., USA. A similar inquiry was organized to follow up reports in the literature suggesting a relationship between liver cell adenoma and the use of hormonal contraceptive pills. The Agency has also given planning advice on cancer registration to epidemiologists from 14 countries.

7.25 *Clearing-house for research on cancer epidemiology.* The Agency and the German Cancer Research

Centre, Heidelberg, Federal Republic of Germany, are together setting up a computerized clearing-house for the collection of data on research in cancer epidemiology. It will operate within the framework of the international cancer research data bank programme of the National Cancer Institute (USA), and provide epidemiologists with information on unpublished work as well as publishing an annual cross-classified directory.

7.26 *Oesophageal cancer, and cancer and alcoholic beverages.* In the oesophageal cancer study on the southern littoral of the Caspian Sea in Iran, the detailed epidemiological investigation has now been completed and the resulting data are being analysed. Preliminary results indicate a much greater intake of bread in the high-incidence areas than in the low-incidence areas, where rice is the staple food. The consumption of sheep's milk and sheep's milk yoghurt was common only in the high-incidence areas. No other foods or vegetables showed any consistent relationship with the cancer, but a low intake of vitamins A and C and of riboflavin was observed in regions of high incidence. No relation was observed between oesophageal cancer distribution and cigarette smoking. The consumption of "nass" (a mixture of tobacco and lime) was found to be virtually confined to Turkoman men, the Turkomans constituting the majority of the inhabitants of the high-incidence area. Small, but probably not significant differences were observed in the amount of *N*-nitroso compounds in the food samples collected from the high-incidence and low-incidence areas; no high levels of any of the polycyclic aromatic hydrocarbons were found, although there were differences in the levels found in bread from the high-incidence area and in the rice from the low-incidence area. No aflatoxins were found in 28 food samples analysed.

7.27 In the high-incidence area in Iran the consumption of alcohol is negligibly small, in contrast with the situation in Brittany, France, where a case-control study is being carried out, in collaboration with the Institut national de la Santé et de la Recherche médicale, to test the hypothesis of a link between oesophageal cancer and the consumption of alcoholic beverages. Drinking and smoking patterns in different sex and age groups have been defined. A total of 136 males and 4 females with cancer of the oesophagus have been interviewed together with much larger numbers of matched hospital controls and controls in the general population, and men and women with liver cirrhosis and delirium tremens. Both smoking and the drinking of alcohol were found to be related to cancer of the oesophagus; and the type of alcoholic beverage consumed appeared to be important—among

¹ Further details of the Agency's work during the period under review are given in the Annual Report of its Director: International Agency for Research on Cancer (1974) *Annual report*, 1974, Lyons.

the oesophageal cancer patients cider and spirits were far more frequently consumed than other alcoholic beverages, whereas alcoholic beverages of all kinds, including beer and wine, were drunk by the patients with cirrhosis and delirium tremens. These findings suggest that carcinogens may be present in certain alcoholic beverages; samples of spirits from the area have been collected for analysis.

7.28 Other collaborative studies on the relationship between alcoholism, alcohol consumption and cancer are also being coordinated, with financial support from the National Institute on Alcohol Abuse and Alcoholism (USA). They include prospective studies, analyses of hospital records, correlation studies and time-trend studies. The preliminary results showed strong evidence of a relationship between oesophageal cancer and liver cancer and between liver cancer and alcohol consumption. There was evidence that the incidence of liver cancer in certain areas of Europe might be higher than hitherto believed. There were also indications of a possible relationship between beer drinking and cancer of the colon and rectum. The study is being extended.

7.29 *Large bowel cancer.* The Agency is coordinating an international collaborative study of large bowel cancer, especially in limited geographical regions where there are both contrasts in incidence and population-based cancer registries. For instance, there appears to be a fourfold variation between the incidence of large bowel cancer in the rural areas of Finland and that in the urban areas of Denmark and southern Sweden, and this is being investigated. The reported differences in the incidence of this cancer between the north and south of Sweden are also being studied. Protocols are being prepared for the study of variations in diet, intestinal bacteria and faecal chemistry in relation to variations in the incidence of cancer of the colon in population samples from the Nordic countries. In Asia, the Department of Sociology, University of Singapore, is collaborating in a study of cancer of the colon among the Chinese and its relationship with occupation and socioeconomic status. Preliminary observations indicate a higher incidence among persons in the professional and managerial classes.

7.30 A collaborative study is being made in New Zealand to discover why the rates for large bowel cancer are much lower in Maoris than in people of European origin. Gastric cancer rates show the converse. A study is planned to determine the frequency of large bowel cancer in selected areas of Argentina and to test the hypothesis of its association with beef consumption; such an association has

recently been demonstrated among the Japanese living in Hawaii.

7.31 *Liver cancer.* The analysis of food samples that have been collected in a study in Swaziland begun in 1972 has been completed and showed that 6.6% were positive for aflatoxin contamination. As in an earlier study in Kenya, the highest frequency of contamination was found in the areas at lower altitudes. The cancer incidence in the area of study is now being investigated. From the analyses of 360 samples in the similar study in Singapore, it has been possible to compute a mean level of aflatoxin ingestion of 12.7 $\mu\text{g/kg}$ body-weight per day. No significant differences were observed between the samples collected from traditional Chinese markets, markets on modern Chinese housing estates, or Malay markets. A collection of market samples has also been made in Kuala Lumpur.

7.32 In Murang'a, Kenya, households were selected at random in areas with high liver cancer frequencies and areas with low frequencies. Hepatitis B antigen was estimated in sera collected in these households, using a sensitive radioimmunoassay method.

7.33 *Immunological studies.* The cell and serum bank at the IARC Research Centre, Nairobi, now contains more than 2000 individual specimens which are being made available to other laboratories for collaborative research. Blood samples from apparently healthy East African donors have been examined for carcino-embryonic antigen and for α -fetoprotein levels. In both tests, titres were generally higher than those of controls from Europe and of non-African controls from Nairobi. HL-A patterns have been established for Burkitt's lymphoma patients and controls in Nairobi and in Shirati, United Republic of Tanzania, but results to date reveal no significant differences.

7.34 *Respiratory system.* The study to assess the contribution of tobacco smoking to the very high incidence of lung cancer among Chinese women in Singapore is being completed. A total of 901 cases and controls have been interviewed and the coded data transferred to magnetic tape and sent to the Agency for analysis.

7.35 In the collaborative study on asbestos and cancer, directed by the Pneumoconiosis Unit of the Medical Research Council of the United Kingdom, efforts are being made to achieve a rigid international standardization of the technique used for measuring asbestos dust in the environment. Trials are in progress in the United Kingdom and the USA of the technique which aligns airborne asbestos fibres in a magnetic

field to facilitate sizing and automatic counting. In an investigation of the influence of fibre diameter and length on the development of mesotheliomas, non-asbestos fibres of diameters similar to those of asbestos fibres are being prepared to closely specified lengths in order to allow comparative studies.

7.36 Breast cancer. In a study carried out in collaboration with the Cancer Registry in Iceland an attempt is being made to determine whether the increased risk of breast cancer that has been demonstrated in first-degree relatives of breast cancer patients may be due not to heredity alone but also to shared environmental and cultural patterns and factors, such as age at first pregnancy. A study of 239 breast cancer patients born since 1916 is being made and their genealogical trees are being constructed from such sources as census data, parish records, and the computer files of the Genetics Committee of the University of Iceland.

7.37 Statistics on the incidence of breast cancer in Iceland were collated for the periods 1911-29, 1930-49 and 1950-72. Not only did the incidence increase markedly over each of these periods but the shape of the age incidence curve also changed. The change in shape was shown to be explicable entirely as an age-cohort phenomenon.

7.38 Virus-associated cancers. In the West Nile district of Uganda, where a prospective seroepidemiological survey began in 1971 to study the association between Epstein-Barr herpesviruses (EBV) and Burkitt's lymphoma, all 35 000 children in the study area have given blood samples. This represents the completion of the first phase of the survey. In the second phase, this child population will be followed up, and new blood samples will be taken from all detected cases of Burkitt's lymphoma and compared with the earlier samples. So far six of the children have developed Burkitt's lymphoma. Plans are being made to test their sera and control sera in a blind and coded study in two different laboratories. As an extension of the study, the association between Burkitt's lymphoma and malaria infection is being tested. Eight small population groups are being followed systematically; their sera are being titrated for EBV antibodies and malaria parasite counts and malaria antibody levels are being measured.

7.39 In connexion with the study on nasopharyngeal carcinoma, prevalent among the Cantonese in Hong Kong and Singapore, the seroepidemiological studies of the behaviour of EBV in different populations in Asia has been completed. Seroepidemiological data for four broad ethnic groups (Chinese in Hong Kong

and Singapore, Indians in Singapore, African children in Uganda, and Europeans in France) have now been analysed to establish and compare the age distributions of EBV infections as shown by the presence of antiviral capsid antigen antibodies. The study showed that 97% of the African children in the 2-3-year-old age-group were already infected by EBV whereas at the same age only 20% of Chinese and 40% of Indian children had already been infected. The genetic studies of Chinese nasopharyngeal carcinoma patients in Singapore have been intensified at the WHO Immunology Research and Training Centre in Singapore (see also paragraph 8.14). It was vital to establish whether the difference that had been found in the HL-A genetic profiles of nasopharyngeal carcinoma patients and of controls was, in fact, a normally transmitted genetic difference and not just a consequence of the development of the carcinoma. The evidence found confirmed that the difference was genetic and might, in fact, be a marker for a greater inherited susceptibility to the disease.

7.40 Infectious mononucleosis in populations of European ethnic origin is also caused by EBV infection. There is some controversial evidence suggesting that infectious mononucleosis increases the risk of Hodgkin's disease and other lymphomas developing later. A collaborative study has been initiated in Norway, Scotland and Sweden to determine whether any such relationship can be demonstrated: some 12 000 patients who had been clinically diagnosed as suffering from infectious mononucleosis between 1940 and 1971 are being checked against the files of the appropriate cancer registries in an effort to trace whether any of them subsequently developed lymphomas.

7.41 Environmental carcinogens. A notable advance in techniques for the detection of very small amounts of nitrosamine in foodstuffs has been demonstrated in an international collaborative study undertaken by seven laboratories, each of which used its own methods to analyse tinned meat samples to which three different nitrosamines had been added. Nitrosamines in a concentration of about 20 µg/kg could be detected with a greater degree of reproducibility than hitherto.

7.42 In the analysis of food samples collected in the oesophageal cancer study in Iran, two quite separate modes of detecting nitroso compounds were used and gave concordant results. Amounts of the order of 1 µg/kg or less of nitrosodimethylamine were found in all the samples collected in the winter season. Somewhat larger amounts in the range of 3-10 µg/kg were found in samples, particularly of bread and dough, collected during the summer months. However, for

only a single sample could the results with these tests be confirmed by mass spectrometry.

7.43 A study of the transformation *in vitro* of epithelial-like cells from rat liver by treatment with dimethylnitrosamine and *N*-methyl-*N'*-nitro-*N*-nitrosoguanidine has been completed. Other cultures of epithelial cells and fibroblasts have been established and the effect of a variety of carcinogens on them is being tested. Chemical carcinogens produce mutations in cultures of selected test strains of bacteria. This property is being used to develop a mutagenicity assay system *in vitro* for the detection and quantitative comparison of the mutagenic effects of chemical substances that are suspected of being carcinogenic.

7.44 *Pesticides*. In further tests of the carcinogenicity of DDT in CF-1 mice, studies were made of the effect of exposure to DDT for limited periods. The results obtained so far indicate that exposure for a period of 15 weeks to 250 ppm of DDT in the diet caused an increase and an early appearance of hepatomas in the mice. The production of hepatomas was dose-related and the hepatomas so induced did not regress after suspension of the treatment.

7.45 *Evaluation of potential chemical carcinogens*. Four working groups were convened during the year to review the available evidence of the carcinogenic risk of chemicals to experimental animals and to man. They considered aromatic amines, hydrazines and related substances, *N*-nitroso compounds and miscellaneous alkylating agents, some organochlorine pesticides, sex hormones and nitrofurans. Four further volumes in the IARC monograph series contain summaries of the work of these groups and related data.¹ Approximately 170 compounds are dealt with in the first seven monographs and a further 30 azo compounds are being studied.

7.46 *Classification*. In conjunction with WHO, the Agency continued its work for the chapter on neoplasms to be proposed for inclusion in the ninth revision of the International Classification of Diseases which is to come into effect in 1978. In view of the decision of the American Cancer Society to incorporate the neoplasms chapter of the ninth revision of the Classification in the next edition of their *Manual of Tumor Nomenclature and Coding* (MOTNAC), discussions have taken place to make the existing MOTNAC scheme more compatible with the proposed neoplasms chapter. In order to improve the indexing of the ninth

revision, all terms relating to neoplasms in the seventh and eighth revisions of the Classification are being systematically examined. So far, some 400 recommendations for removal or amendment have been made.

7.47 *Training programme*. Fifteen research training fellowships and 11 travel fellowships were awarded in 1974 in the Agency's fellowship programme. Two courses each lasting two weeks and involving 40 participants each were organized in Lyons—one on biostatistics and epidemiology in cancer research and the other on the immunovirology of cancer. Contrary to previous practice, financial support for the participants was obtained from their home institutions and was not provided by the Agency.

Cardiovascular diseases

7.48 The programme of WHO on cardiovascular diseases involves activities ranging from support for fundamental research—such as studies on cardiac metabolism—to community studies investigating the causes and methods of control of various cardiovascular diseases in defined population groups. So far these studies have largely concentrated on individual diseases, but during 1974 advice was sought from experts on how to integrate them into a comprehensive cardiovascular control programme that could be carried out within the existing systems of health care in each country.

7.49 *Prevention of ischaemic heart disease* is being investigated by intervening with factors known to increase the risk of developing the disease. The collaborators in a multifactorial prevention trial conducted in five European centres and coordinated by WHO met in March to review the methods of screening for the various risk factors involved and to consider the preliminary results of intervention with those factors.^{2,3} It is intended to continue this trial for another two years. On the other hand, the annual meeting in October of the investigators involved in another study decided to start closing down in 1975 the trial being carried out among 15 000 adult males in Budapest, Edinburgh and Prague to test the effect of clofibrate on reducing serum cholesterol levels as a measure of primary prevention of ischaemic heart disease.⁴ This trial, which started in 1965, is conducted on a double-blind basis, and therefore no interim

¹ International Agency for Research on Cancer (1974) *IARC monographs on the evaluation of carcinogenic risk of chemicals to man*. Volume 4, Volume 5, Volume 6 and Volume 7, Lyons.

² *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 4.11.

³ WHO European Collaborative Group (1974) *Int. J. Epidemiol.*, 3, 219-224.

⁴ Heady, J.A. (1973) *Bull. Wld Hlth Org.*, 48, 243-256.

results or indications will be available until the code is broken.

7.50 In collaboration with the European Society of Cardiology, a meeting was held at Megève, France, to draw up a guide on the prevention of coronary heart disease at the community level for the use of general practitioners and auxiliary medical personnel.

7.51 Much has been said and written about the role of physical inactivity in atherosclerosis and coronary heart disease but little has been proved. The main difficulty has been to quantify *habitual physical activity* in individuals and in population groups easily, reliably and reasonably cheaply. As reported in previous years, a miniaturized heart beat counter developed with the assistance of the Federal Polytechnic School in Lausanne, Switzerland, is capable of discriminating eight levels of heart rate, roughly corresponding to different levels of physical activity. This apparatus was tested during 1974 among rural Norwegian schoolchildren and is being used in a population study in Norway. With the assistance of the Environmental Physiology Laboratory, Oslo, a manual was also drafted on methods for assessing habitual physical activity; these include the use of the counter.

7.52 *Trace elements* and their role in the etiology of atherosclerosis and the pathogenesis of hypertension are the subject of a continuing collaborative study, in cooperation with IAEA, by centres in 21 countries. Three of the main areas of research involve comparative trace element analyses (mainly by neutron activation techniques) of autopsy samples and material from living persons. Between 1969 and 1974 about 230 autopsy cases were studied and samples of heart, liver and kidney collected. Biological material easily obtainable from living subjects (e.g., hair, nail clippings, etc.) was collected from several hundred volunteers. These specimens are being analysed for zinc, copper, selenium, cadmium, and chromium and for a number of other elements when practicable. The analytical part of this research is not yet complete; it is therefore too early to draw firm conclusions, but the preliminary results indicate changes in the trace element concentration in subjects who have died from myocardial infarction or hypertension as compared with persons who died free of these diseases. Differences have also been found as a function of the sex, age, clinical findings and ethnic origin of the subjects. In connexion with this research, a WHO Collaborating Centre for Reference on Studies of Kidney Cadmium in Relation to Human Hypertension was designated in St Louis, Mo., USA. The collaborators in these three research areas met in November to coordinate their work and analyse the results to date.

7.53 In a fourth project, samples of refined and unrefined sugar and of polished and unpolished rice from 17 countries have been analysed to evaluate the effects of food refining on the trace element content. The results show dramatic losses in such essential trace elements as chromium, zinc, and copper when these foodstuffs are refined—a finding consistent with the hypothesis that the excessive consumption of refined food, typical of industrialized, “coronary-prone” populations, may lead to trace element deficiency.

7.54 In connexion with a fifth collaborative project, investigating the relationship between the hardness or softness of water supplies and mortality from cardiovascular diseases, a WHO Collaborating Centre for Reference on Studies of Cardiovascular Diseases in Relation to Drinking-Water Quality was designated in 1974 in Ottawa. Here again, the final results of the study are not yet available, but circumstantial evidence is emerging that population groups in areas with soft, demineralized water have higher mortality rates from cardiovascular diseases than those in hard-water areas.

7.55 The organization of *services for cardiovascular emergencies* was considered by a WHO expert committee in April. The committee formulated recommendations for community programmes on the handling and management of cardiovascular emergencies and on the establishment of adequate emergency services, with the practical application of present knowledge in this field particularly in mind. The committee made a comprehensive review of the entire problem of cardiac emergencies, and suggested guidelines on subjects ranging from prevention and self-aid to advice on highly sophisticated diagnostic and surgical techniques.

7.56 Coronary care is now well established as an important element in the treatment of patients with acute myocardial infarction but is not always easy to provide in rural areas with a low population density. In the European Region a working group met in November to discuss how most effectively to approach the problem of providing care for coronary patients outside large population centres. The group also drew up guidelines for providing this type of service in general intensive wards.

7.57 It is rather widely held that early mobilization of patients with infarction, even those in the hospitalization phase, is an important factor in their treatment and has a significant bearing on their psychological state, particularly with regard to their attitude towards returning to the normal activities of life. At the same time definite evidence is lacking on the long-term prognosis for these patients, especially regarding the prevention of recurrences and the prolongation of life.

These are the main aims of study in a project started in 1973 among 23 centres in the European Region, that is concerned with evaluating comprehensive *rehabilitation and secondary prevention* programmes for patients with myocardial infarction. At a meeting of the investigators in May, some amendments were made to the operating protocol, which was drawn up in 1972 and has since been tested. Emphasis was laid on determining the standards by which to assess the effects of psychological and social intervention.

7.58 Also in May a coordination meeting on activities concerning the rehabilitation of patients with cardiovascular diseases was held in Turku, Finland, between the International Society of Cardiology's Scientific Council on Rehabilitation, the International Society for Rehabilitation of the Disabled, the Social and Rehabilitation Service of the United States Department of Health, Education, and Welfare, and WHO. A joint committee was established to coordinate the approach to studies on the short-term and long-term effects of rehabilitation of cardiovascular patients. Further discussions were held at a follow-up meeting in Teheran in November.

7.59 The results of a WHO-coordinated project on the *registration of acute ischaemic heart disease* were finalized during 1974 for publication. The study was conducted in collaboration with a number of centres in Europe and also one each in Australia and Israel. It has proved extremely useful, not only giving a clear picture of the natural history of myocardial infarction in a community but also marking definite differences in the incidence of acute myocardial infarction in various parts of Europe. This is the first time such detailed information has been collected on the morbidity and mortality due to a "heart attack" on a continental scale. As a follow-up to this study, a working group in the European Region met in March to discuss a simplified registration scheme and surveillance system for patients with myocardial infarction that could be adopted for use in countries with different systems of medical care through community cardiovascular control programmes.

7.60 The registration study has shown that, among those dying within four weeks of a heart attack, 50% do so within the first two hours. Obviously a great many lives could be saved if distinct symptoms preceding an imminent heart attack could be identified. More of the centres that participated in the registration study are now also taking part in a study, started in 1973, to identify premonitory symptoms and signs of imminent myocardial infarction and sudden death; the centres include those in Austria, Bulgaria, Czechoslovakia, Denmark, Finland, Federal Republic of

Germany, the Netherlands, Poland, Romania, Sweden, the United Kingdom, and the USSR.

7.61 In the multicentre study of arterial hypertension described in the Annual Report for 1973,¹ analysis of the results to date made at a meeting of the investigators in November showed that there is a large reservoir of untreated and of previously undetected cases of hypertension in most communities. The investigators also discussed the problem of cost/benefit analysis of a community control programme in this field.

7.62 The stroke register project, also previously described,² continued in 17 centres in 1974, three new ones in India and Sri Lanka starting to send data to WHO from July onwards. In all, 6472 new cases of stroke had been registered by September. In follow-up observations of 3113 patients three months after stroke, it was found that about 80% of patients who had been comatose at onset died, as compared with only 15% of those who had been fully conscious. Past history of stroke, acute myocardial infarction, hypertension and diabetes mellitus did not appear to have much influence on the prognosis.

7.63 In March, a meeting on the control of hypertension and stroke in the community was held in Tokyo. The extent of these conditions throughout the world was reviewed, and the need was stressed for a community approach, for developing locally practicable methods for control, and for education of both medical personnel and the public.

7.64 In the South-East Asia Region, an intercountry workshop held in Madras, India, in February-March on the control of stroke and the rehabilitation of stroke patients highlighted certain epidemiological features peculiar to the countries in the Region. Hemiplegia in children and stroke in adults as a result of lesions in the carotid artery and in women during the puerperium were considered particularly to require investigation. The participants discussed the registration and follow-up of hypertensives in order to identify risk groups, the organization of pilot projects for stroke control and rehabilitation in rural and urban areas and of intensive medical care units in referral hospitals, and national planning for the organization of stroke services.

7.65 In addition to continuing the pilot studies on *rheumatic heart disease* that are being conducted in six population centres in the Regions of Africa, the Americas, South-East Asia and the Eastern Mediter-

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 4.13.

² *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 4.12.

ranean,¹ the Organization assisted with streptococcal studies in Egypt to promote the prevention of rheumatic fever and provided expert services for the Latin American Conference on Rheumatic Fever held in August in Buenos Aires.

7.66 At the end of November, a meeting of experts was held in Geneva to discuss how the experience gained in the control of single cardiovascular diseases in the community could contribute to a *comprehensive care system for cardiovascular diseases*. The meeting emphasized the importance of the integration of community cardiovascular control programmes into the existing organizations for medical care in different countries, the value of standardizing terminology, criteria and methods for the evaluation of results, and the need for regular dissemination of information, perhaps through WHO, to keep national health authorities abreast of the latest developments in this field.

7.67 Following a meeting in October 1973 at which present knowledge and needed research on *primary pulmonary hypertension* were reviewed, cooperative investigations coordinated by WHO are being prepared. The collection of data on the normal pulmonary circulation started during 1974.

7.68 One difficulty in analysing and comparing data from different sources is the lack of *standardization* of procedures, nomenclature, etc. Two WHO Collaborating Centres (in Atlanta, Ga., USA, and in Prague) continued their standardization of blood lipids from various parts of the world, and the Atlanta centre has also started a multinational pilot study in the Region of the Americas to assess the lipidic phenotypes and other factors associated with preventable cardiovascular disease risk. Standardization is also promoted through the community programmes (ischaemic heart disease and stroke registers, control of arterial hypertension at the community level, control of rheumatic fever) in which standard operating protocols and record forms are used and annual meetings of investigators held to discuss common operating procedures. A number of contacts were also made during the year with different international scientific bodies interested in the standardization of terminology and methods in the cardiovascular diseases field in order to coordinate and accelerate the work that is being done.

7.69 In January, the *WHO field research team* on cardiovascular diseases moved to Accra after five years in Kampala in order to carry out comparative investigations in a different part of the African continent. A joint programme has been worked out with the Uni-

versity of Ghana Medical School, where the Department of Medicine and Therapeutics was designated as a WHO Collaborating Centre for Research and Training in Cardiovascular Diseases, and operating protocols and record forms have been established for a number of projected activities (register of cardiovascular disease patients, a study of blood pressure patterns and the prevalence of hypertension in African schoolchildren, a study on cardiac failure, and a study of cardiovascular disease incidence in defined population areas).

7.70 The Organization continued to give assistance to several countries in the preparation of cardiovascular disease control programmes. In the Region of the Americas, El Salvador received assistance to carry out epidemiological studies, and Chile to assess the cardiovascular diseases problem. In South-East Asia, an investigation into stroke and hypertension was promoted in India and Sri Lanka in cooperation with national medical organizations. The development of facilities for the radiological diagnosis and the resuscitation and rehabilitation of cardiac patients was assisted in Mongolia. Bangladesh, Burma, Indonesia, Nepal, Sri Lanka and Thailand received help in determining the magnitude of health problems due to cardiovascular diseases and evaluating existing facilities for early diagnosis, treatment and rehabilitation. WHO also assisted the Government of the Democratic People's Republic of Korea in the formulation of plans for the development of services in connexion with both cardiovascular diseases and cancer.

7.71 Among the work in *comparative cardiology* done during the year, mention may be made of studies at the Nuffield Institute of Comparative Medicine, London, showing that human blood coagulates rather less readily than does that of most mammals but the thrombolytic mechanisms are comparable; yet man is more liable to develop intravascular clots. Activation of coagulation occurs by an increase in factor VIII and can be prevented by beta-adrenergic blockage without affecting fibrinolysis; this finding is being utilized in clinical trials on surgical patients. Studies on diseases of the arteries done in several animal model systems at the Institute for Animal Pathology, Berne, included an investigation in pigs to ascertain whether stenosing arteriosclerosis is a pathogenic factor in the development of oesophagogastric ulcers; the conclusion was that the vascular changes follow rather than precede ulceration.

Other chronic noncommunicable diseases

7.72 Over the past two years the Organization has been giving increasing attention to a number of other chronic noncommunicable diseases—such as diabetes

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 4.20.

rheumatoid arthritis and related diseases, chronic nonspecific respiratory diseases, and renal and connective tissue diseases—whose impact on the level of health and socioeconomic growth of the more developed and of many developing countries has become more marked. In the selection of the international work pursued particular care has been taken not to duplicate the great number of studies already being carried out at the national level.

Diabetes mellitus

7.73 It is now generally accepted that diabetics have a greater risk of developing atherosclerotic disease in the cerebral, coronary or peripheral arteries. However, this may not be true of all populations, and the type and extent of these complications may vary from one country to another. In addition, many factors other than the control of diabetes have been suggested as influencing the development of the vascular lesions associated with it. A WHO programme of investigation into diabetes and its complications in several national and geographical groups was drawn up in 1973 and finalized at a meeting of the collaborators that was held in London in January 1974, when standardization of the procedures to be used was also discussed. The participants were from 15 countries in five WHO Regions. The study will be concentrated on known diabetics between the ages of 35 and 54 years, in whom the relationship of frequency of microvascular disease to the duration and treatment of diabetes and other factors will be investigated. Methods have been devised to ensure the random selection of patients for the study.

7.74 In the Caribbean area, the Organization provided advisory services on diabetes mellitus in accordance with the resolution adopted at the Fifth Caribbean Health Ministers Conference, and a study group on diabetes in the Region of the Americas made recommendations on the total care of patients.

Rheumatoid arthritis and related diseases

7.75 In March, the Arthritis and Rheumatism Council in London organized, with WHO's participation, an international symposium on infection and immunology in the rheumatic diseases. Immediately after the symposium, a meeting of a number of investigators from different parts of the world was held by WHO in cooperation with the Kennedy Institute of Rheumatology, London, to consider the lines along which international cooperation on rheumatoid arthritis and systemic connective tissue diseases could most fruitfully be organized and the role WHO might play, in addition to its activities in this field since 1953.

7.76 The participants reviewed the evidence that has accumulated in recent years to indicate that rheumatoid arthritis and certain allied diseases are clearly associated with immunological abnormalities, and the advances in microbiology and immunology that are leading to renewal of interest in the possibility that infection plays a causal role. There are also suggestions that different clinical syndromes within this group of disorders arise from immunoregulatory defects whose expression could be influenced by both genetic and environmental factors. These concepts are likely to have important implications in relation to the etiology, epidemiology and health care aspects of these diseases. In view of the present epidemiological uncertainties it was felt that there would be considerable difficulties in conducting a major international project incorporating immunological studies to test etiological hypotheses, but that studies conducted on a smaller scale by individual centres might be valuable, particularly if internationally acceptable clinical and laboratory criteria were used. Standardized immunological tests were felt to be needed both for epidemiological and diagnostic studies and in clinical trials of new drugs.

7.77 At the Sixth Pan American Congress on Rheumatic Diseases, in Toronto, Canada, in June, the preliminary results were presented of a collaborative multinational epidemiological study of rheumatic diseases in the Americas that is assisted by the Organization.

Chronic nonspecific respiratory diseases

7.78 Chronic nonspecific respiratory diseases are responsible for widespread morbidity and mortality, but there is considerable disagreement concerning appropriate terminology, methods of diagnosis, identification of probable etiological factors, and definition of the principles of prevention. In the European Region, a working group met in Brussels in July to review the terminology at present used in connexion with chronic lung diseases and made proposals for definitions of terms in lung physiology, clinical pathology, and cardiorespiratory syndromes. A multilingual glossary is being prepared.¹

7.79 In November, a meeting of investigators on the epidemiology of chronic nonspecific respiratory diseases was held in Geneva. The available information on the epidemiology of chronic bronchitis, emphysema and generalized airway obstruction was reviewed, and definitions were agreed upon for use in the epidemio-

¹ See also paragraph 10.44 in connexion with the meeting of another working group, concerned with chronic respiratory diseases in children in relation to air pollution.

logical identification of those conditions. The participants also considered diagnostic criteria and clinical differentiation, and proposed standard methods of investigation in the several disciplines appropriate to this group of diseases. The problem of identification of the early stages of disease was discussed, with a view to defining the principles of prevention. It was particularly stressed that clinical and epidemiological studies should be combined with pathomorphological studies.

Smoking and health

7.80 In January the Executive Board requested, in resolution EB53.R31, that an expert committee be convened to study the problem of tobacco smoking. That committee met in December, when it reviewed the evidence on the harmful effects of smoking on health—particularly in relation to cancer, cardiovascular diseases and chest diseases, and during pregnancy—and the relative significance of tar, nicotine and carbon monoxide as both pathogenic and dependence-inducing factors. It also considered the effectiveness of the positive approaches against smoking (e.g., educational programmes, antismoking campaigns, health warnings on cigarette packets) and of the restrictive approaches (restriction of advertising, taxation of tobacco products, restriction of smoking in certain places or of sales from vending machines etc.) and discussed the development of potentially less harmful forms of smoking. The legislative, social and economic aspects were also raised. The recommendations of the committee are intended to be of assistance to governments and public health authorities in their efforts to curb smoking.

7.81 In the European Region a survey was initiated on smoking and health during the year, making use of a questionnaire that had been prepared with the assistance of the Federal Centre for Health Education, Cologne, Federal Republic of Germany. The Organization also participated actively in the work of the planning committee for the Third World Conference on Smoking and Health that is to be held in New York in 1975 under the sponsorship of the American Cancer Society.

Chronic renal diseases

7.82 In order to facilitate comparative studies, a WHO Collaborating Centre for the Histological Classification of Renal Diseases was designated during the year at the Mount Sinai School of Medicine, New York, N.Y., USA. Together with appropriate institutions around the world, the centre is preparing an

internationally acceptable histopathological classification for this group of diseases, using comparable methodology for the pathodiagnosis of renal lesions.

7.83 Since the early 1960s the Organization has been active in coordinating research into endemic nephropathy, a disease of unknown etiology that occurs in south-eastern Europe, notably in Bulgaria, Romania, and Yugoslavia. It has organized a number of meetings and consultations between scientists from these and neighbouring countries to define areas of research, and in November a further meeting was held in Belgrade and Lazarevac, Yugoslavia. This was attended by investigators from Bulgaria, Hungary, Nigeria, Romania, Yugoslavia and the USSR, who reviewed present concepts of the etiology of endemic nephropathy and compared this disease with an acute nephrotic syndrome that is prevalent in certain African countries. Further cooperation in research was outlined.

Dental health

7.84 In 1974, as in the previous six or seven years, epidemiology remained the principal area of the Organization's dental health work. The wide range of data on the global distribution of oral diseases now stored on computer tape has made it possible for this data bank to respond to a great variety of requests for information.

7.85 A change of emphasis is being introduced, however. During the year a five-year dental health programme was drawn up to provide overall objectives, specific targets and detailed activities for the period 1975-79. While present activities in epidemiology, research and prevention are included and expanded, they are regarded as servicing and contributing to projects in the priority area of manpower and services planning and development, the broad aim of which is to assist governments to train appropriate personnel and to institute, or revise if necessary, national plans for oral health services.

7.86 In September, the manual on basic methods for oral health surveys¹ was revised with a view to making it even more useful to administrators and planners of dental services. Preparations were made also for the revision of the manual on the application of the International Classification of Diseases to dentistry and stomatology² in line with the ninth revision of the

¹ World Health Organization (1971) *Oral health surveys: basic methods*, Geneva.

² World Health Organization (1973) *Application of the International Classification of Diseases to Dentistry and Stomatology, ICD-DA*, Geneva.

parent manual—the International Classification of Diseases.

7.87 The Organization provided technical advice or help in statistical analysis for dental epidemiological studies being carried out in Afghanistan, Egypt, France, Federal Republic of Germany, Guinea, Haiti, Iran, Israel, Italy, Pakistan, Senegal, Sri Lanka, and the United Republic of Cameroon.

7.88 Assistance was continued to research on various aspects of dental health. The adult oral health survey in Malaysia received further support and a working group of the International Dental Federation was assisted in an attempt to develop better methods of measuring dentofacial anomalies, and especially methods suitable for use in defining the needs of populations for dental services. Support was continued for the Central Research Institute of Stomatology in Moscow which is now a WHO Collaborating Centre for Research on Dental Epidemiology. A beginning was made in developing a dental public health centre in Indonesia. In the Region of the Americas, two-year evaluations were completed of the tooth sealant studies in Colombia, Jamaica, Mexico and Peru, and analysis of the results is expected in 1975. The oral pathology centre in Chile was further developed.

7.89 The continuing investigation into the etiology of dental caries in Papua New Guinea, which is assisted by the United States National Institutes of Health, and a similar study in Colombia undertaken in collaboration with the Royal College of Surgeons, London, and the United States National Institute of Dental Research, have both shown that microbiological and plaque contrasts are very important factors, and that strong associations exist between the prevalence of caries and certain elements in enamel, dental plaque, saliva, food, water, and soil. The results obtained in the extensive Papua New Guinea study are being analysed. Assistance has also been given to a complementary study of trace elements in the enamel of extracted teeth from a number of populations.

7.90 The following countries or territories were assisted by the Organization in planning and strengthening dental health services during the year: Argentina, Burma, the Cayman Islands, Colombia, Cuba, Fiji, Guinea, Indonesia, Iraq, Khmer Republic, Mongolia, Montserrat, Panama, Papua New Guinea, Republic of Korea, Republic of Viet-Nam, Senegal, Sri Lanka, Syrian Arab Republic, Thailand, Trinidad and Tobago, Uganda, United Republic of Cameroon, and Zaire. Under the dental health programme in Ecuador dental care is now being provided to some 96 000 people living in rural areas and previously without access to dental services.

7.91 An event of significance for the dental health programme in the Americas was the inclusion for the first time of oral health as a topic for the Sixth Caribbean Health Ministers Conference, which adopted a resolution that a strategy and a plan of action should be developed for improving oral health and dental services in the Commonwealth Caribbean area.

7.92 In the international collaborative study of dental manpower systems in relation to oral health status, which is being carried out with the cooperation of WHO and the Division of Dentistry, United States Bureau of Health Resources Development, the collection of dental epidemiological and sociological data was completed in Japan. At meetings in Toronto, Canada, and in London, the team sociologists and the team epidemiologists discussed the preliminary analysis of the data from Australia, the Federal Republic of Germany, New Zealand and Norway, before proceeding with the final data analysis for each participating country.

7.93 In the European Region a study of the organization of dental health services was completed. It was based on descriptions provided by each Member State of its own dental health services. This information made it possible to summarize and to compare the organization, legislation, delivery, administration and provision of dental services in the countries of the Region.

7.94 In January the Executive Board, in resolution EB53.R30, called for the development of WHO's programme for the promotion of fluoridation of community water supplies and of other approved methods for the prevention of dental caries. After the advice of members of the WHO Expert Advisory Panel on Dental Health had been sought, a programme was drafted for presentation to the Twenty-eighth World Health Assembly.

7.95 In countries of the Western Pacific Region a review of the fluoridation situation was carried out, and, where water fluoridation was impracticable, the use of fluorides in other ways was encouraged, especially in schools. Assistance was provided to the Government of Israel in the fluoridation of water supplies. Support was given for fluoridation courses in Buenos Aires and in Quito and Guayaquil, Ecuador. El Salvador and Honduras carried on programmes to provide fluoride mouth rinses for some 100 000 children, while in Venezuela 30% of the population now benefit from water fluoridation.

7.96 The Organization participated in a national seminar in India on the crippling effects of fluorosis on the skeletal system. It was reported that the

defluoridation of drinking water would be needed in areas adjoining certain large-scale hydroelectric schemes where the fluoride content of the subsoil water is excessive and had been found to be increasing.

Mental health, drug dependence and alcoholism

7.97 The mental health programme has continued to lay stress on the implementation of recent advances in psychiatry and other behavioural sciences through improvements in the national and local organization of mental health services and through the integration of these services into general health and community welfare programmes. The programme embraces drug dependence and alcoholism in recognition of the psychosocial nature of those conditions. To provide a basis for the further improvement of mental health services, WHO is promoting research into the epidemiological, clinical, psychological, social, and biological aspects of various mental disorders. At the same time studies are being conducted on the evaluation of preventive and treatment measures and on alternative methods of organizing services.

Mental health services

7.98 A WHO Expert Committee on Organization of Mental Health Services in Developing Countries was convened in October. Effective methods of treatment of many psychiatric conditions have now been established, but in most developing countries, despite the great need, they have scarcely as yet been put into practice. The main question considered by the Committee, therefore, was how such treatment methods—including resocialization programmes, chemotherapy, and various forms of supportive therapy—could be made available to many more people. It was recommended that WHO promote the evolution of an effective but inexpensive mental health system with wide population coverage. To this end the work of peripheral health personnel should include such priorities as dealing with psychiatric emergencies, supervising the chronically mentally ill, and the recognition and management of cases presenting at general health clinics.

7.99 Many of the activities that WHO has carried out in the field of psychiatry have been concerned with the training of personnel, for which the reader is referred to Chapter 3 and Table 2.

7.100 In the African Region, surveys of mental health manpower and resources were followed up by WHO in several countries and discussed at a meeting in Nairobi in September of the Association of Psychiatrists in Africa.

7.101 In the Region of the Americas, assistance was provided to Argentina, Brazil, Honduras, Jamaica, Nicaragua, and Peru in the modernization of their psychiatric hospitals and the reorientation of their mental health programmes, particularly with respect to the decentralization of services through the promotion of basic mental health services in communities. As a means of extending minimum psychiatric services to rural areas in Brazil and Cuba, the Organization continued its assistance to projects for the training of general practitioners in basic psychiatry. Ten countries of the Region (Brazil, Costa Rica, El Salvador, Guatemala, Honduras, Jamaica, Nicaragua, Panama, Paraguay, and Uruguay) were assisted in the organization of psychiatric nursing services.

7.102 The shortage of trained personnel to provide mental health care is acute in the South-East Asia Region, where a series of meetings has been organized to consider how to meet this problem. A regional workshop was held in Bangkok in November-December to review the present status of education and training for psychiatric personnel and to consider methods of augmenting the number of health and allied workers for community-oriented mental health activities. A similar seminar for the Western Pacific Region was held in Manila in January. Advisory services on the development of mental health programmes and the training of psychiatric personnel were provided to Bangladesh, Mongolia, and Sri Lanka in South-East Asia.

7.103 A second meeting of a working group on mental health services in pilot study areas in the European Region was convened in Trieste, Italy, in September that included participants from the pilot areas in Finland, the Federal Republic of Germany, Italy, Netherlands, Norway, Spain, Switzerland, and the United Kingdom. The main object of the project is to find norms and indicators relevant to the planning and evaluation of community mental health services and to the effective operation of its component parts. In the first phase, completed during the year, a census of patients attending mental health facilities was carried out and an inventory of personnel and other resources compiled. A start has now been made on the second phase, which comprises a study of a specific patient cohort in its passage through the service. This will permit consideration of the norms and indicators of adequate and acceptable standards of patient care.

7.104 The present situation regarding services for children and adolescents in the European Region was reviewed at a consultation and proposals were made for increasing relevant WHO activities. A steering

committee comprising representatives from various disciplines and from the United Nations Division of Social Affairs and the International Union for Child Welfare made suggestions for WHO-assisted projects in the field of child psychiatry.

7.105 At a WHO conference on the care of the mentally retarded, held in June at Santiago de Compostela, Spain, participants from 19 European countries reviewed the health, social, and educational services that are available to mentally retarded people in the Region and discussed the role of voluntary organizations. Discussions on the adequacy of different patterns of care were based on the results of an inquiry into the extent and deployment of resources in pilot study areas, undertaken by nine countries in collaboration with WHO. Plans were agreed for a wider and more detailed inquiry into existing national provision for the mentally retarded, and special emphasis was placed on the coordination of measures for vocational training and socialization. This is an area where the responsibilities of psychiatric services are being increasingly shared with those of the educational and social services, and clearer definitions of the functions of those concerned are necessary to ensure the optimum use of community resources.

7.106 A symposium on the prevention of mental disorders of the elderly, held in Munich, Federal Republic of Germany, in April, considered measures whereby elderly patients whose illness includes a significant psychiatric component might be supported in the community rather than in a mental hospital, especially when hospitalization is determined mainly by social or economic as opposed to psychiatric reasons. A preliminary study undertaken by the Organization in nine pilot areas in different European countries demonstrated the shortages of appropriate non-hospital accommodation. The possible contributions of various community agencies, including voluntary services, were discussed.

7.107 A study on health insurance and mental illness was carried out in the European Region in 1973 and 1974. Its aim was to collect and analyse information about the legal, social, and economic aspects of private and state health insurance benefits for mentally ill and handicapped persons in different countries. It showed that such provisions are sometimes restricted in comparison with the range and amount of insurance coverage for physical illness and handicap, and these restrictions may influence the structure and pattern of mental health services. Besides reflecting cultural attitudes towards mental disorder, the study has yielded valuable material for a long-term evaluation of cost/

effectiveness, which is itself a principal factor in the evaluation of mental health services.

7.108 In the Eastern Mediterranean Region, assistance was provided to Iran, Iraq, Kuwait, the Libyan Arab Republic, Sudan, Tunisia and the United Arab Emirates in the development of mental health programmes and the implementation of new projects. Of particular interest were the establishment of a psychiatric and rehabilitation centre in Benghazi, Libyan Arab Republic, and the opening of a psychiatric unit in a general hospital in Sfax, Tunisia.

Psychiatric epidemiology and standardization of diagnosis, classification, and statistics

7.109 An international glossary and guide to the use of the section on mental disorders in the eighth revision of the International Classification of Diseases has been published in English,¹ and work is proceeding on the French and Spanish versions. Proposals for the ninth revision of the International Classification of Diseases were approved by the WHO Expert Committee on Health Statistics in June; an innovation is that a set of instructions concerning the use of each of the categories is proposed for inclusion in the published classification.

7.110 The planning stage has now been completed for a study of the development of mental health information systems in a number of countries in all WHO Regions. Work has begun on the production of a further series of films and videotapes to determine the extent of agreement between psychiatrists in different parts of the world and to promote the standardization of psychiatric diagnosis in psychiatric teaching and research.

7.111 In the international pilot study of schizophrenia, which is supported by the National Institute of Mental Health in the USA, by WHO, and by collaborating centres in eight countries, the preliminary results are now to hand of a two-year follow-up study of 1200 patients. They indicate considerable differences in the outcome of schizophrenic disorders in different cultures; patients from some developing countries included in the series seem to have a more favourable prognosis than those from developed countries. A five-year follow-up study of the cohort is under way to test these findings, which are important for the planning of mental health services and the development of methods of treating schizophrenia and other functional psychoses.

¹ World Health Organization (1974) *Glossary of mental disorders and guide to their classification for use in conjunction with the International Classification of Diseases, 8th Revision*, Geneva.

7.112 During the year a start was made on the analysis of data collected in a study on the standardized assessment of depressive disorders in five series of patients—one each in Canada, Iran and Switzerland and two in Japan. Preliminary results show considerable similarity between depressive patients in different cultures and confirm the adequacy, applicability, and reliability of the schedules developed for the assessment of such patients. A meeting of the investigators collaborating in the study, held in Montreal in August, resulted in research proposals for a follow-up study on the impact of depressive disorders on patients' families and on the course of depression in different cultures.

7.113 The feasibility of long-term follow-up studies of psychiatric patients in a developing country is being investigated in Sri Lanka, and it has already been shown that such follow-up studies can be carried out successfully by personnel other than psychiatrists.

7.114 Data collected from 20 countries in the Eastern Mediterranean Region have been analysed as a basis for the planning of future mental health programmes. Other data collected in the Region were presented at a meeting of the World Psychiatric Association in Teheran in May.

Biological psychiatry

7.115 Psychopharmacology is one of the most important areas of work in present-day psychiatry. With the establishment of a centre in Greece, WHO's collaborative network in psychopharmacology now comprises 25 centres, which have continued to study the efficacy and safety of psychotropic drugs and their mechanisms of action. Special emphasis has been given to the exchange of information in clinical and experimental psychopharmacology and to training (see Table 2). The activities of several of the centres were presented by the heads of those centres and by WHO at the ninth congress of the Collegium Internationale Neuro-psychopharmacologicum, which was held in Paris in July.

7.116 Following consultations in 1972 and 1973 on depressive disorders and on psychopharmacology, four centres within the reference network are now working together on the development of methodology for future international studies in biological psychiatry.

Neurosciences

7.117 In accordance with the recommendations made by a WHO consultant group in 1973, five collaborating centres for research and training in neurosciences were established in 1974—in Montreal,

Canada; Marseilles and Strasbourg, France; Mexico City; and Ibadan, Nigeria.

7.118 During a second WHO consultation on neurosciences at the WHO Collaborating Centre in Marseilles in November it was proposed: (1) to develop a uniform methodology for collaborative neuroscience studies; (2) to develop widely applicable techniques for the effective prevention, treatment, and control of neurological disorders of major public health importance; (3) to train neuroscientists to undertake further research; and (4) to train local personnel in the application of new methods and recent findings. Seven subjects for collaborative research were identified. Close collaboration was maintained with the International Brain Research Organization, the International League against Epilepsy, the World Federation of Neurology, and the International Federation of Multiple Sclerosis Societies.

7.119 WHO collaborated with the International Brain Research Organization and UNESCO in organizing a symposium on genetic, nutritional, and environmental factors in brain growth and development, which was held in New Delhi in October. Its main purpose was to assess present knowledge and to develop active contact between groups working on different aspects of the problems in different countries.

Suicide

7.120 A publication entitled *Suicide and Attempted Suicide* was issued in the WHO Public Health Papers series.¹ The first part is devoted to the ascertainment of deaths from suicide and describes studies carried out by WHO in collaboration with the University of Manchester, United Kingdom, on national differences in methods of case-finding and recording and in the derivation of suicide rates. Reported suicide rates vary very widely between countries; these variations are often explained on social, cultural, religious, economic or similar grounds, but this study shows that they may simply be due to a lack of uniformity in the manner in which the decision is reached that a particular death is attributable to suicide. The conclusion may be drawn that, until statistics can be improved nationally and internationally, it will remain hazardous to construct epidemiological or sociodemographic theories about suicide. The second part of the book is an account of the deliberations of a working group on suicide and attempted suicide in young people, convened in the European Region in

¹ Brooke, E. M., ed. (1974) *Suicide and attempted suicide*, Geneva, World Health Organization (*Public Health Papers*, No. 58).

1973 to discuss both the above study and the results of a WHO questionnaire on procedures for the ascertainment of suicide. A further conference on suicide and attempted suicide was held in August 1974 in Luxembourg. The participants discussed the results of a pilot study on attempted suicide in seven European countries. Emphasis was placed on the development of information systems and the methodology of data collection, and the conference also explored the relevance of social and cultural factors to the frequency of suicide and attempted suicide and tried to identify the characteristics of high-risk groups. Special attention was given to suicide prevention services and possible methods of evaluating them.

7.121 There are indications that suicide is a very serious problem in several countries of the Region of the Americas, especially among young adults. An epidemiological study on suicide was started in El Salvador, Peru, and Venezuela in order to obtain more accurate information and to orient further research on etiological factors.

Psychosocial problems

7.122 The technical discussions at the Twenty-seventh World Health Assembly in May were devoted to the role of the health services in preserving or restoring the full effectiveness of the human environment in the promotion of health. The primary focus of these discussions was on psychosocial factors affecting health and the delivery of health care. There was general agreement among participants that man's biophysical environment cannot be separated from his psychosocial environment and that a multidisciplinary approach is required at all levels of health service and in the training of health personnel. The World Health Assembly, in resolution WHA27.53, proposed that a multidisciplinary programme be organized to explore the influence of psychosocial factors on health in general and on mental health in particular and to study the part that those factors play in the functioning of health services. In December the Organization held a consultation on the psychosocial aspects of health and health care at which the contribution that the behavioural sciences could make to health was reviewed and priorities for work in this area within WHO's mental health programme were considered. An assessment was also made by WHO of the resources and needs in the behavioural sciences in selected medical schools, universities, research units and health ministries in six African countries.

7.123 In response to a request from UNRWA for advice on the development of a mental health pro-

gramme for Palestine refugee children, WHO assessed conditions in selected health, welfare and educational sites in two areas serviced by that Agency (Gaza and West Bank).

7.124 A series of site visits and a survey by questionnaire were also made in order to select sites for a project on juvenile delinquency in which WHO is collaborating with the United Nations Social Defence Research Institute with a view to assessing the mental health aspects of current practices in juvenile justice.

Drug dependence and alcoholism

7.125 In January, a meeting of investigators on tests for the detection of dependence-producing drugs in body fluids¹ assessed the current status of these tests with respect to their reliability, sensitivity, and cost, and to the applications to which they lend themselves (e.g., as screening procedures or for corroborative testing). The meeting considered that certain new tests, particularly those of an immunochemical nature, are rapid and highly sensitive but have limited specificity. Such tests are very useful as screening procedures, but positive results usually require confirmation by other methods.

7.126 A Scientific Group on Progress in the Methodology of Evaluation of Dependence-liability of Drugs, meeting in November, reviewed the existing methods for testing the dependence-producing potential of narcotic and psychotropic drugs. The group noted that considerable progress had been made in developing methods for analysing the "reinforcing" properties of psychoactive drugs (i.e., the properties by which they induce a further desire to continue their use). However, in order to quantify the "reinforcing" properties and to improve the predictive value of the methods used, there is a need to refine the techniques for the self-administration of drugs by experimental animals. The group proposed multidisciplinary research to facilitate collating the results of preclinical and clinical assessments of the dependence-inducing potential of drugs with those of epidemiological studies concerned with the patterns of drug-taking by man. Suggestions were also made regarding the establishment of appropriate research and training centres.

7.127 The Twenty-seventh World Health Assembly, in resolution WHA27.59, recognized that the use of alcohol and other psychoactive drugs contributes to the extensive and serious problem of road traffic accidents (see also paragraph 10.93) and requested the Director-General to convene a group of experts to

¹ *Wld Hlth Org. techn. Rep. Ser.*, 1974, No. 556.

study the influence of alcohol and psychotropic drugs and their interaction on driver skills and traffic accidents. The collection of data relevant to such a meeting has begun.

7.128 WHO continued to support research on methods of determining the dependence-liability of drugs and their acute and chronic toxic effects. In this connexion, significant progress was made during the year in the development of animal models to study the effects on primates of drugs actively smoked by them. Studies on the effects of cannabis smoke on animal and human lung tissue were also assisted.

7.129 With the support of the National Institute on Alcohol Abuse and Alcoholism of the USA, the Organization has embarked on a study aimed at formulating international criteria for detecting and classifying disabilities related to alcohol consumption. Preparatory reviews of the psychological, psychobiological, clinical, organic, and sociocultural aspects of alcoholism were completed during the year.

7.130 A review entitled *Problems and Programmes related to Alcohol and Drug Dependence in 33 Countries* has been published.¹ This brings together and analyses information collected, presented, and discussed by participants at a WHO interregional training course (1971) and seminar (1972) on these problems. The publication sets out to illustrate the wide range of findings among countries, which may help persons responsible for planning to consider trends, anticipate developments, and try out solutions applied elsewhere. Consideration is given not only to the medical aspects of these problems but also to the socioeconomic, psychological, educational, and legal aspects.

7.131 The Organization maintained close collaboration with other bodies working in the field of drug dependence, including in particular the United Nations Commission on Narcotic Drugs, the International Narcotics Control Board, and the United Nations Division of Narcotic Drugs.

7.132 In addition to supporting four continuing WHO projects initiated in 1972² and 1973,³ the United Nations Fund for Drug Abuse Control (UNFDAC) assisted three new WHO activities—a worldwide operational research and reporting programme on the epidemiology of drug dependence, a pilot treatment

and rehabilitation project in Burma, and training and consultation activities in the Republic of Viet-Nam. Staffing of the UNFDAC-supported treatment and rehabilitation project in Thailand was completed and implementation of the work plan undertaken. Visits were made by United Nations/ILO/FAO/WHO missions in Burma, Laos, and Pakistan to assess drug production, availability and use and to formulate preliminary plans for UNFDAC-supported programmes in those countries.

7.133 In the Region of the Americas preparatory work has been completed for a multinational study on alcoholism that will be carried out in six cities in Brazil, Colombia, Costa Rica, Dominican Republic, Peru, and Uruguay to obtain data on the prevalence of alcoholism, on drinking patterns and attitudes to alcohol, and on the treatment of alcoholics. In its second year of operation, the WHO-supported centre for the study of alcohol and alcoholism, in San José, Costa Rica, began a series of new research projects on several aspects of alcoholism.

7.134 In the South-East Asia Region, drug abuse as an emerging social and health problem is a cause of concern in Burma, India, Indonesia, Sri Lanka, and Thailand. An UNFDAC-assisted project for crop substitution and for the treatment and rehabilitation of drug-dependent persons is in operation, with WHO as executing agency for the latter component. A pilot project for the prevention and control of drug abuse has been developed in two areas in Burma. Advisory help was given in the training of enforcement officers for government service in India, Indonesia, and Sri Lanka with the aim of exerting greater control over drug abuse, and in connexion with a pilot training course in New Delhi for drug control administrators and enforcement officers. Since prevention and control measures call for coordination of national and international efforts in legislation and enforcement and also involve a number of national agencies working in the fields of public health, social welfare, and education, an intercountry meeting of representatives of such agencies was held in October in Jakarta to review the problem of drug abuse, develop national plans, and prepare guidelines for WHO assistance.

7.135 Alcoholism is a major public health problem in most European countries, and recent research suggests that its prevalence may be related to the average consumption in a population. It seems reasonable, therefore, to examine measures taken for the control of the supply of alcohol, as one important aspect of prevention. This is being done by means of a study on alcohol consumption undertaken in collaboration

¹ Moser, J. (1974) *Problems and programmes related to alcohol and drug dependence in 33 countries*, Geneva, World Health Organization (Offset Publication No. 6).

² *Off. Rec. Wld Hlth Org.*, 1973, No. 205, paragraph 4.108.

³ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 4.96.

with the Finnish Foundation for Alcohol Studies, which has offered WHO the services of a research worker for 18 months. The purpose of this activity is to study national control policies for alcohol, principally in Europe.

7.136 In the Eastern Mediterranean Region, assistance was provided by WHO to Iran and Pakistan in the evaluation of the treatment of drug-dependent persons. A questionnaire designed to gain a first subjective view of drug abuse in the Western Pacific Region was circulated to Member States and the results were reported to the twenty-fifth session of the Regional Committee. This material was utilized by a working group on measures for the prevention and control of drug abuse, convened in Manila in December. Advisory assistance was provided to the Philippines for a study of the national and local distribution of dependence-producing drugs and of the prevalence of social, economic, and health problems resulting from the use of such drugs. Financial assistance for the study was provided by a private foundation. Consultation was provided in Hong Kong on the further development of the treatment and rehabilitation programme and the evaluation of existing services in the field of drug dependence. Consultant services were also provided in Malaysia on the epidemiology of drug abuse.

Human genetics

Population genetics

7.137 The study of the genetic structure of human populations can make an important contribution to our understanding of the reasons for morbidity and mortality. Consanguineous marriages have been studied in several human populations to assess the number of mutations carried by an average person. However, relatively little such work has been done in respect of African populations, and WHO therefore assisted the University of Ibadan, Nigeria, in carrying out a survey of the numbers of infant deaths and congenital abnormalities resulting from 240 consanguineous marriages compared with the numbers resulting from 229 non-consanguineous marriages, the aim being to estimate the number of rare recessive genes per person of the population. For the consanguineous group the figures for neonatal deaths and congenital abnormalities were 2.6% and 1.6%, while for the control group they were 0.3% and zero respectively, indicating that about nine deleterious genes are carried heterozygously per person of the population—a figure comparable with estimates for other racial groups.

7.138 The Serological Population Genetics Laboratory at the Royal Hospital of St Bartholomew, London, has begun a statistical analysis to discover whether an association exists between blood group, serological and biochemical markers, and certain types of disease. This WHO-assisted project is based on an earlier finding that among patients with thromboembolism there is a higher proportion of blood group A subjects than in the normal population.

Cytogenetics

7.139 A cytogenetic study of 2500 unselected newborn infants, undertaken by the Institute of Medical Genetics, Moscow, with WHO support, revealed chromosome abnormalities in 0.8% of the children—a frequency similar to that observed in other parts of the world. The abnormalities were mainly structural recombinations, trisomy 21, and sex chromosome defects. A similar study of over 1000 newborn infants with congenital malformations revealed a frequency of chromosome aberrations of 13.6%. These aberrations included D and E trisomy, the occurrence of which was equivalent to about one per 7500 unselected births. A third study carried out at the Institute during the year showed a high frequency of karyotypic abnormalities in some 350 premature babies. Spontaneous chromosome aberrations in somatic cells were found in 7.4%, compared with 1.3% in unselected newborn infants. The higher figure in premature babies indicates the extent of environmental influence on embryonic and fetal development.

7.140 WHO provided assistance to the Institute for Genetic Studies, Bangalore, India, for a study of chromosome abnormalities in 3500 individuals, which began during the year. Work also began on the development of a quantitation technique for the study of chromosome polymorphism in both normal and abnormal individuals, which is being undertaken by the Biological Sciences Research Institute, Montevideo.

Haemoglobinopathies and allied disorders

7.141 In a WHO-assisted study in Iran during the year, blood samples from some 600 patients suffering from various forms of anaemia were examined by electrophoresis to determine the proportion due to haemoglobinopathies. The study revealed 1.2% of the group with homozygous β -thalassaemia, 1.3% with sickle-cell anaemia, and 0.3% with α -thalassaemia. A similar study was carried out with WHO support on two unselected groups of people in Senegal—nearly 4000 in villages along the lower Casamance River and nearly 2500 in villages along the Senegal River. The

two groups were found to contain, respectively, 9.4% and 12.3% of persons with haemoglobin S and zero and 2.5% of persons with haemoglobin C disease. The situation in Senegal, as shown by the study, thus compares with that in other African countries but contrasts with that in Europe, where these diseases are much less frequent. The prevalence of haemoglobin A₂ was found to be 1.2% in both groups. Two other research projects were started in the African Region—a study of sickle-cell anaemia in Congo that is being carried out by the Ecole supérieure des Sciences, Brazzaville, and a study of haemoglobinopathies in the United Republic of Cameroon, which has been undertaken by the University Centre for Health Sciences, Yaoundé.

7.142 Analyses carried out at the WHO Regional Reference Centre for Glucose-6-Phosphate Dehydrogenase, at Ibadan, Nigeria, have confirmed the widespread prevalence of glucose-6-phosphate dehydrogenase (G6PD) deficiency in the African Region. The prevalence in Central Africa ranges from 2% to 25% and is thus comparable with that in some countries of South America and Asia. The centre continued its

studies on rare variants of G6PD deficiency, and during the year six additional gene variants were detected and characterized.

Biochemical genetics

7.143 In biochemical genetics, WHO is supporting research into various aspects of molecular biology. The Institute of Experimental Medicine, Leningrad, USSR, is studying the possibility that genetically determined metabolic errors arise not only from disturbances in the activity of a single enzyme but also from defects in the supramolecular structure of enzyme complexes. During the year under review, the Institute carried out work on geometrical parameters and on the shape of the molecule of mitochondrial DNA during the formation of mitochondrial protein structure.

7.144 Studies have begun at the Hebrew University, Jerusalem, on the possible part played in haemoglobinopathies by hemichrome—the compound formed by the oxidation of the α and β chains of haemoglobin and occupying an intermediate position between the haeme group and the protein.

8. IMMUNOLOGY

8.1 One of the main aims of WHO's programme in immunology has been not merely to advance research but also to encourage the application of newly developed immunological techniques and concepts to diseases of major public health importance. Since a certain number of these techniques are now being applied in day-to-day patient care, the Organization has also started a programme for the standardization of immunological reagents and techniques. Special emphasis is placed on the immunology of tropical diseases, and because these are prevalent in countries where the level of fundamental research is still inadequate, special efforts are made to train scientists from developing countries (see paragraph 8.11).

8.2 At the WHO immunopathology laboratory at the Cantonal Hospital in Geneva, a new model of immune complex disease was developed by chronic infection of mice with *Trypanosoma brucei*. Because the pathogenesis of the late clinical manifestations of trypanosomiasis is still poorly understood, studies were undertaken of the role of the host's immune response in the development of the tissue lesions. Initially immune complexes involving parasitic antigens and corresponding antibodies were deposited in the renal glomeruli. The myocardium and the brain were the sites of the later lesions, which are characterized by the interstitial localization of parasites, parasite antigens and immunoglobulins, suggesting a *local* formation of immune complexes. In addition, the pathogenesis of the anaemia occurring during these infections has been shown to be due to an increased red cell destruction which may also be related to the presence of circulating immune complexes. These studies in experimental animals have led to investigation of the role these mechanisms play in the development of the late clinical manifestations of human trypanosomiasis.

8.3 The pathogenesis of lupus-type immune complex disease was further investigated through the study of the formation of DNA/anti-DNA complexes in mice. The genetic control of the anti-DNA response in mice was defined in experiments involving hybrids and backcrosses of various inbred strains. It was found that this genetic control, unlike some other immune responses, was not related to the histocompatibility locus.

8.4 An experimental basis for the role of some bacterial infections in the development of anti-DNA antibodies was provided by the demonstration of circulating DNA and then of anti-DNA antibodies after injection of endotoxin in various strains of mice. The role of other auto-antibodies, such as anti-base-membrane antibodies, in the development of immune complex glomerulonephritis is also being investigated, using a radioimmunoassay technique. Preliminary results suggest that such antibodies are present in about one-third of lupus patients and in a high percentage of a mouse strain known to develop a lupus-like syndrome spontaneously.

8.5 A new radioimmunological method was set up for the detection and quantitation of hepatitis B antigen using radiolabelled Fab fragments of purified hepatitis B antibody followed by a simple precipitation using polyethyleneglycol. The percentage of antigen circulating in the form of immune complexes could be quantitated by combining the use of the labelled Fab fragments with precipitation by anti-human immunoglobulin sera. These methods make it possible to study the correlation between the clinical manifestations of the viral infection with the absolute amount of immune complexes formed with the virus-associated antigen. A method was also developed that allows for the detection of complexes in experimental immune complex diseases and in sera from patients with systemic lupus erythematosus, liver diseases or rheumatoid arthritis.

8.6 The WHO Collaborating Centre for Tumour-specific Antigens, Moscow, has developed a highly sensitive radioimmunodiffusion technique for α -feto-protein. It has been shown that elevated levels of this antigen are also present in other than liver tumours. Work is also proceeding on the study of the antigenic structure of cell membranes in hepatomas.

8.7 Techniques for the testing of nonspecific immune factors have been prepared by the WHO Collaborating Centre for Testing of Natural Resistance Factors, Prague, which has also continued to provide for the scientific community germ-free animals and sera containing complement and natural factors without detectable amounts of antibodies.

8.8 In the WHO-coordinated research in Bangkok on the immunology and immunopathology of the shock syndrome in dengue haemorrhagic fever, studies were pursued into the possibility that this syndrome may be due to simultaneous infection with two closely related strains of the same virus; further research has also been undertaken to clarify the role of the activation of the complement system in the shock syndrome.

8.9 Collaboration has continued with the International Union of Immunological Societies on the standardization of immunological reagents for clinical use, and arrangements have been made with several laboratories for the preparation of standard reagents. There has also been close cooperation with the Union's newly established Committee for Clinical Immunology; in particular, a list has been prepared of laboratories willing to receive trainees in clinical immunology.

8.10 In July a workshop on the identification, enumeration and isolation of B and T lymphocytes from human peripheral blood was organized in London in collaboration with IARC and the Imperial Cancer Research Fund (United Kingdom) to serve as a starting-point for the standardization of the reagents and techniques required in this increasingly important area of clinical immunology. A meeting concerned with standardizing clinical and immunopathological criteria for the diagnosis of kidney disease was organized at the Department of Pathology, State University of New York at Buffalo, USA, with WHO support. The nomenclature of human allotypes and the standardization of the selected reagents were the subject of a workshop organized in July by the WHO Collaborating Centre for Reference on Genetic Factors of Human Immunoglobulins, Bois-Guillaume, France.

Immunology research and training centres

8.11 The Organization gives support to, and in some cases provides skilled staff for, 11 centres for research and training in immunology or advanced immunological studies. They are situated in Australia, Brazil, India, Israel, Kenya, Lebanon, Mexico, Nigeria, Singapore, and Switzerland (two centres). One of their primary functions, in addition to the type of research instanced below, is the training of selected scientists, particularly from developing countries, in this increasingly important field. During the year they provided individual training of varying duration for a number of specialists and held courses for more than 140 students, divided almost equally among courses in basic immunology and advanced courses in specialized aspects (see Chapter 3).

8.12 The centre in Nairobi, in addition to carrying out research in vervet monkeys on the immuno-

pathological mechanisms operating in experimental trypanosomiasis linked to the work in mice at the WHO immunopathology laboratory in Geneva, has also collaborated with scientists at the East African Trypanosomiasis Research Organization in investigating the role of immune complexes in East Coast fever; preliminary results indicate that immune complexes are present in this parasitic disease of cattle.

8.13 Joint research on schistosomiasis performed together with the Wellcome Trust and the Kenyan Public Health Laboratories has resulted in the development of *in vitro* techniques for studying antibody-mediated or lymphocyte-mediated cytotoxicity by labelling schistosomulae with radioactive chromium. In man, it has been possible to show that patients with schistosomiasis form antibodies which can direct lymphocytes to kill the schistosomulae; this is the first demonstration of a possible mechanism of human immune resistance to schistosomes. A meeting of investigators held at the Nairobi centre in December reviewed the nature of schistosomal antigens and discussed resistance to infection in experimental animals with particular reference to postulated mechanisms of resistance and escape from resistance. Diagnostic techniques and the relevance of animal models for studies of immunological responses in man were also considered, and proposals for further research were made.

8.14 The centre in Singapore, in research supported by IARC, continued studies of histocompatibility antigens (HL-A) as an index of the importance of genetic factors in the etiology of nasopharyngeal carcinoma in the Chinese population living in Singapore. The first indications of a genetic susceptibility may be the finding in the Chinese patients of an increased frequency of certain HL-A antigens of one locus and a nonspecific deficiency of an HL-A antigen of the second locus. Studies on the incidence of HL-A antigens in different ethnic groups living in Singapore are also being conducted. Among New Zealand servicemen stationed in Singapore it has been established that Maoris have a higher frequency of hepatitis B antigen than New Zealanders of European ethnic background; the two groups are from the same country of origin and are living under the same environmental conditions.

8.15 A new, sensitive radioimmunoassay method for the detection of hepatitis B antigen antibodies and complexes was developed. This method was also applicable to the detection of α -fetoprotein in patients with hepatocellular carcinoma (see also paragraph 8.6). It has been shown that 92% of these patients have levels of α -fetoprotein greater than 10 μ g/ml, while only

36.5% of patients with other liver diseases have values greater than 10 $\mu\text{g/ml}$.

8.16 Studies have also been undertaken to test the hypothesis that some patients with tuberculosis may have a defect in cell-mediated immunity. Preliminary results seem to show that the peripheral lymphocytes of these patients show a subnormal response to phytohaemagglutinin.

8.17 Among the research conducted at the centre in Lausanne into basic immunological mechanisms is a study of the antigens present on *Trypanosoma* and *Leishmania* to clarify the process by which these parasites escape the immune response of the host. It has been shown that surface antigens are mobile on the membrane of the parasites. For instance, using an immunofluorescence technique with *Leishmania enriettii*, it was found that exposure to specific antibodies resulted in aggregation or "capping" of the antigenic determinants on the surface over the poles of the parasite. Immediately after capping was observed, the antigens disappeared from the surface and remained absent for some three hours, after which resynthesis of antigens occurred. In a study carried out on human lymphocytes it has been shown that the majority of B lymphocytes have on their surface IgD alone or in association with IgM. When the two immunoglobulins are present on the same lymphocyte the variable

region in the polypeptide chain is the same for both; the significance of this is being explored.

8.18 The centre in Beirut, in addition to participating (with the New Delhi centre and other institutions) in the research on nutritional states and immunological function mentioned in paragraph 2.56, has been engaged in the collaborative study on leishmaniasis coordinated by the Lausanne centre and designed to test, *inter alia*, the hypothesis that diffuse cutaneous leishmaniasis may be due to a failure of cell-mediated immunity similar to that found in leprosy.

8.19 Continuing its research on the immunology of leprosy, the centre in São Paulo, Brazil, has shown that, contrary to reports by others, in lepromatous patients the injection of allogeneic lymphocytes was not followed by clinical improvement. Leprosy is also the subject of immunological research at the New Delhi centre (see also paragraph 4.103).

8.20 In Mexico City, the centre has initiated several collaborative research projects which were drawn up in 1973 to investigate possible immunopathological causes of the cardiac and other lesions in Chagas' disease. Among the first results of recently started research on the immunology of amoebiasis has been the finding that children with amoebic liver abscesses have raised levels of α -fetoprotein.

9. PROPHYLACTIC, DIAGNOSTIC AND THERAPEUTIC SUBSTANCES

Drug evaluation and monitoring

9.1 A WHO Scientific Group on Guidelines for Evaluation of Drugs for Use in Man, convened in October, undertook a wide-ranging review of the evaluation and testing of drugs in the light of increasing knowledge and formulated proposals and guidelines for present and future research in this field. It emphasized the need for a comprehensive and coordinated approach to drug evaluation, including post-marketing surveillance.

9.2 Decisions by governments to restrict, limit, or ban the availability of a specific drug owing to insufficient safety or lack of efficacy have continued to be notified to Member States in WHO drug information circulars, in accordance with resolutions WHA16.36, WHA23.48 and WHA26.31; the total number of these circulars issued since the start of the service in 1963 amounted to 143 by the end of the year under review.

9.3 In accordance with resolution WHA23.13, which seeks to prevent disasters like that caused by thalidomide, WHO has been developing an international early-warning system of information to Member States on the occurrence of suspected adverse reactions to drugs. During 1974, with the inclusion of centres in Bulgaria, Romania, and Yugoslavia, the number of national drug monitoring centres actively contributing data to the WHO Research Centre for International Monitoring of Adverse Reactions to Drugs rose to 20. Information on the type and frequency of reporting of adverse reactions to individual drugs is available to Member States from the WHO centre at short notice. As at 1 November 1974, 84 792 reports of adverse reactions to drugs under 8541 different names were included in the centre's files. Detailed summaries of newly reported reactions, most frequently reported reactions, and serious or fatal reactions, including fetal malformations and carcinogenic effects, have continued to be provided for study by national centres. Two consultations involving experts from national drug authorities were held during the year. The first studied improved methods of detecting adverse reactions within the international system at the earliest possible stage; the second suggested methods of improving the operational effectiveness of the international information system and proposed that

validated information be disseminated to drug regulatory agencies, to institutions capable of undertaking clinical pharmacological research, and to developing countries lacking drug monitoring facilities.

9.4 The economic consequences of adverse effects resulting from drug therapy are receiving attention in some Member States, and, in line with the advice of several consultants, WHO has undertaken a similar study, with the collaboration of national monitoring centres. The results of the study will help in determining the cost/effectiveness of warning and control measures designed to minimize the occurrence of adverse reactions.

9.5 As part of the investigation of suspected adverse reactions reported to the WHO centre, the Organization continued to assist studies aimed at locating patients receiving drugs suspected of causing serious adverse reactions and at determining the pattern of suspected drug-induced diseases. These studies were undertaken in intensive monitoring centres in Australia, Czechoslovakia, France, India, Italy, Netherlands, New Zealand, Poland, Switzerland, and the United Kingdom.

9.6 In accordance with resolution WHA26.30 of the Twenty-sixth World Health Assembly, a feasibility study on the establishment of an international information system on the registration of drugs in Member States was initiated in 1974. The study has been limited to data of immediate use and is based on the current registration procedures and requirements in a number of Member States. Drug authorities in 26 countries have agreed to participate in the feasibility study and to contribute data on newly registered drugs. The results of the study will be assessed after two years.

9.7 As a consequence of discussions in January at the fifty-third session of the Executive Board, the advice of consultants was sought on the establishment of guidelines on the registration, utilization, and misuse of drugs. In addition, a group of experts has investigated the difficulties experienced in some developing countries in meeting the cost of medicines needed for health programmes and has suggested that these countries draw up a list of essential drugs, which might then be obtained in quantity at the lowest cost.

9.8 It is well known that drug utilization varies in different countries according to diverse factors including disease patterns, the availability of drugs, and the level of social and economic development. However, data on the type and extent of drug use in relation to health needs are generally inadequate. To establish guidelines for studies in developing countries that would yield the kind of data needed, WHO has initiated preliminary investigations in countries with relatively well developed drug-recording systems. Investigators in Denmark, Netherlands, Norway, Sweden, and the United Kingdom participated in this study, which has shown that differences exist in the use of groups of drugs in different geographical areas, even when the circumstances are similar. These findings are likely to lead to a better understanding of drug utilization patterns in relation to health needs, and the methods of study can in future be applied in countries where the drug-recording systems are less comprehensive.

9.9 In the Region of the Americas the Organization provided advisory services on drug evaluation and monitoring to Ecuador. A directory of drug control agencies in the European Region was prepared in duplicated form and distributed to governments and drug control centres in Europe. This publication is expected to promote collaboration among the various national agencies.

9.10 A third European symposium on clinical pharmacological evaluation in drug control, organized in collaboration with the Ministry of Youth, Family Affairs and Health of the Federal Republic of Germany, was held in Heidelberg in November. It was attended by participants from 24 countries, and representatives and observers from a number of non-governmental organizations. The symposium dealt with the operation of drug regulatory agencies, the importance of drug control for public health, the responsibilities of health authorities for disseminating information on drugs, and the role of a centre for clinical pharmacology.

9.11 In the field of toxicology, a working group on the organization and functioning of poisons control centres was held in Lyons, France. The group discussed the needs and the means of meeting them in the countries of the European Region, and, as a result of this discussion, a link between poisons control centres and toxicity information systems under the environmental health programme is being planned. Other areas covered were the collection of information, the maintenance of contacts with institutes at national levels responsible for clinical pharmacology and drug control, and the implementation of training

programmes. In Iraq the Government is seeking to establish a poisons information centre and the Organization provided advisory services in that connexion.

Pharmaceuticals

9.12 The WHO Expert Committee on Specifications for Pharmaceutical Preparations, which met in November, considered a revised text of the document "Good Practices in the Manufacture and Quality Control of Drugs". The original text had been recommended to Member States by the Twenty-second World Health Assembly,¹ but comments subsequently received from national authorities had indicated the need for revision. The first draft of the new text, prepared in response to a request in resolution WHA23.45, was circulated to all Member States. Taking into account the comments received, the Committee adopted a final revised text to be presented to the World Health Assembly.

9.13 The Committee also reviewed the document "Suggested Certification Scheme on the Quality of Pharmaceutical Products moving in International Commerce", the original text of which was recommended by the Twenty-second World Health Assembly in resolution WHA22.50 for adoption by Member States.² In the light of comments received from Member States, a substantially revised text was adopted by the Committee for presentation to the World Health Assembly.

9.14 The Committee also considered the pharmaceutical aspects of drug evaluation for registration. The development of information on drugs is a cumulative process as the primary drug substance evolves into a pharmaceutical preparation. The various aspects of the information required are described in detail in the report (to be published).

9.15 The Committee recommended that further work on the revision of the *International Pharmacopoeia* should concentrate on the general methods of testing pharmaceutical products and on specifications for drug substances (pharmaceutical raw materials) rather than on finished products, with the aim of developing a system by which a steady flow of specifications could be produced in accordance with resolution WHA20.34.

9.16 With regard to the quality requirements for plastic containers used for pharmaceutical products, the Committee decided to include provisional requirements as an annex to its report for the purpose of

¹ *Off. Rec. Wld Hlth Org.*, 1969, No. 176, Annex 12, part 1.

² *Off. Rec. Wld Hlth Org.*, 1969, No. 176, Annex 12, part 2.

eliciting further comments prior to the preparation of a final text. The document "Plastic Containers for Pharmaceuticals—Testing and Control" referred to in the Annual Report for 1973¹ is now available as *WHO Offset Publication No. 4*.

9.17 In view of the growing importance of chemical reference substances for the proper control of drug quality, the Committee annexed to its report a comprehensive document covering the principles and criteria governing the use and evaluation of chemical reference standards for drugs, purity requirements, methods of characterization and evaluation, and guidelines for packaging, storage, and distribution.

9.18 During 1974 the WHO Centre for Chemical Reference Substances, in Stockholm, provided government control agencies, pharmaceutical manufacturers, and other interested laboratories in 43 countries with 2000 samples of 69 different reference substances. The centre has further expanded its activity with respect to standards for semi-synthetic penicillins, establishing one new standard substance, replacing two existing standard substances, and continuing work on the validation of several others.

9.19 The thirty-first and thirty-second lists of proposed international nonproprietary names for pharmaceutical substances were published in the *WHO Chronicle*.² The lists, containing 94 and 85 names respectively, bring the total of such proposed names to 3309. The fourteenth list of recommended international nonproprietary names, consisting of 175 proposed names to which no objection had been filed or in respect of which objections had been withdrawn, was also published in the *WHO Chronicle*.³ In addition to the third cumulative list of proposed names,⁴ comprising all those published in lists 1-25, computer printouts with alphabetical listing of all names from lists 1-31, together with references to national nonproprietary names, were made available, on request, to national committees on nonproprietary names and other interested parties.

9.20 In the African Region, assistance was given to Liberia in reorganizing the pharmaceutical services. In the Americas, the Organization provided advisory services on the quality control of pharmaceuticals to Chile, Colombia, Cuba, Guatemala, and Mexico. Advisory services were also provided at a meeting of pharmaceutical control experts from the Andean countries (Bolivia, Chile, Colombia, Ecuador, Peru,

and Venezuela). The participants recognized the need for uniformity in drug standards and testing procedures and they recommended that the Andean Group governments adopt the standards set forth in WHO's *International Pharmacopoeia*. The Organization assisted in a project for establishing a Caribbean Regional Drug Testing Laboratory in Kingston, Jamaica. The purpose of this laboratory is to perform microbiological and pharmacological testing of drugs and thus complement the existing national laboratories that test drugs only by chemical procedures. In Haiti, work has begun on a WHO-assisted feasibility study of a national pharmaceutical production facility in which quality control would be a primary factor; at the present time, almost all pharmaceuticals in Haiti are imported. In the South-East Asia Region assistance was given to Indonesia in the training of drug inspectors in Semarang, Bandung, and Jakarta, and to Sri Lanka for the training of drug analysts in the manipulation of infrared and ultraviolet spectrophotometers and for the training of drug inspectors. Help was also given in the commissioning of a drug production facility in Dacca. In the Eastern Mediterranean Region, Ethiopia and the Syrian Arab Republic were assisted in their efforts to modernize and extend government drug control organizations. Facilities for drug storage and transportation were improved in Saudi Arabia, Sudan, and the United Arab Emirates. The Libyan Arab Republic was advised on pharmaceutical quality control, and in Afghanistan and Lebanon quality control in government laboratories was strengthened. Advisory services were provided to national drug production facilities in Somalia.

Health laboratory technology

9.21 In May the Twenty-seventh World Health Assembly, in resolution WHA27.62, called for intensification of the work of WHO in the coordination of the development of standards for chemical and biological diagnostic materials and their use, with special emphasis on quality control. In November the Organization held a consultation on the subject with some 30 experts in laboratory science from 15 countries; they were drawn from national institutions, international scientific societies, and industry. Guidelines were drawn up and priorities identified for the development of WHO's programme in this field. It was suggested that, in addition to coordinating work on standardization and establishing standards and reference preparations, WHO should disseminate information and encourage and support research. Special attention was given to the development of quality control in health laboratories, and the importance of training in this field was stressed. Preparations have

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 11.14.

² *WHO Chronicle*, 1974, 28, No. 3 (Suppl.) and No. 9 (Suppl.).

³ *WHO Chronicle*, 1974, 28, No. 10 (Suppl.).

⁴ World Health Organization (1971) *International nonproprietary names for pharmaceutical substances: cumulative list No. 3, 1971*, Geneva.

accordingly been made to hold interregional courses on this subject at which use will be made of a report that has been prepared on quality control methodology.

9.22 An extension of the glucose and urea standardization programme that started in 1971¹ is under preparation in several countries. A quality control pilot project in clinical biochemistry is in operation in Baroda, India, and assistance in this field was also given to Jordan and Lebanon.

9.23 Technical assistance in the organization and development of health laboratory services with emphasis on communicable diseases was given to many countries including Algeria, Bangladesh, Bhutan, Burma, Chile, Colombia, Dahomey, Democratic Yemen, Ecuador, India, Indonesia, Iran, Iraq, Khmer Republic, Kuwait, Malawi, Morocco, Nepal, Pakistan, Peru, Republic of Viet-Nam, Somalia, Sri Lanka, Syrian Arab Republic, Turkey and Venezuela.

9.24 Where central health laboratories have been established, WHO assistance has mainly focused on the development, strengthening, management and supervision of intermediate and peripheral health laboratories. Assistance, however, was given to UNDP projects for the development of health laboratory services in general in Chile, Ethiopia, Mexico, Sudan, Tunisia and Venezuela. Countries in most Regions have been assisted in the production and control of vaccines, among them Burma, Colombia, Cuba, Ecuador, Egypt, Guinea, India, Indonesia, Malaysia, Mexico, Nigeria, Republic of Viet-Nam, Thailand and Venezuela. Support for the monitoring of environmental pollution was given to selected laboratories in Europe.

9.25 Other specialized services at central level also received assistance, such as food microbiology in Burma and Indonesia, virology in Sri Lanka, venereal disease serology in Bangladesh, and toxicology in Burma. A collaborating laboratory for streptococci was set up in India and laboratory reference facilities for influenza, smallpox, rabies and dengue haemorrhagic fever viruses were established in Indonesia.

9.26 Studies continued on the utilization and supply of human blood and blood products, in collaboration with the League of Red Cross Societies. WHO reaffirmed the principle of voluntary donation of blood, holding that the practice of giving blood or plasma against payment is to be discouraged both on health and on moral grounds.

9.27 The WHO Collaborating Centre for Reference and Research in Blood Grouping, London, continued to give technical advice, provide reference facilities, supply grouping sera, and organize the international

panel of donors of rare blood types as well as the international exchange of rare typing sera. The blood transfusion service, Muhimbili Hospital, Dar es Salaam, and the blood transfusion service, Colombo, were recognized as national centres for blood grouping. Assistance in developing or improving blood banks was given to many countries including Burundi, Democratic Yemen, Ethiopia, Gabon, Laos, Malaysia, Somalia, and Yemen.

9.28 Training of laboratory staff continued to receive major priority and courses were given at country, regional and interregional level (see Chapter 3). A WHO guide to the teaching of technicians was prepared. The medical school and laboratory technician training centre in Fiji was assisted so that future laboratory technicians of the South Pacific islands should be trained in an environment similar to their own rather than in developed countries, where the techniques tend to be automated and the conditions different. The training of technicians was supported in Burma, Egypt, Ethiopia, India, Mongolia, Nepal, Papua New Guinea, Sri Lanka, Sudan, Thailand and Tunisia, and the training of laboratory assistants in Burma, India, Indonesia, Khmer Republic, Laos, Mongolia, Papua New Guinea, Sri Lanka and Thailand. A syllabus for a course on the maintenance and repair of health laboratory equipment was prepared for use at the regional and country level. Thailand received assistance in planning a programme in this field.

9.29 Progress in automation has been followed with interest, and information has been disseminated through reports that are periodically brought up to date. Studies are in progress to develop a system for measuring cost/effectiveness in health laboratories and the cost/benefit of automation in clinical chemistry and haematology, taking into account the need for adequate maintenance and repair facilities.

9.30 The International Committee on Laboratory Animals, which is supported by WHO, continued, through advice, fellowships and reference activities, to assist countries in the care and use of laboratory animals. WHO assistance in this respect was given to Egypt, Lebanon and the Republic of Viet-Nam. The results of a survey of training facilities in this field were published by the International Committee. WHO also cooperated with the Central Veterinary Laboratory of the Dominican Republic and the Centre for Veterinary Research and the Institute of Hygiene of Venezuela in the organization and expansion of their laboratory animal colonies.²

² Laboratory animal medicine is considered in paragraphs 4.172-4.173.

¹ *Off. Rec. Wld Hlth Org.*, 1973, No. 205, paragraph 7.34.

Biological standardization

9.31 The Organization continued its activities leading to the establishment of international standards and international reference preparations for biological substances used in human medicine and the formulation of requirements for biological substances (and/or the provision of guidelines to enable national control authorities to formulate such requirements).

9.32 The WHO Expert Committee on Biological Standardization, at its meeting in November, established a number of international standards and reference preparations in the field of endocrinology. The following international standards and reference preparations for bioassay were established or replaced: human urinary and pituitary gonadotrophins, calcitonins, and parathyroid hormone. The following human international reference preparations for immunoassay were established: insulin, luteinizing hormone, renin, parathyroid hormone, thyroid-stimulating hormone, and chorionic gonadotrophin

and its subunits. Other preparations for bioassay and/or immunoassay were also considered—namely, angiotensins, human oxytocin and human vasopressin, and four gastrointestinal hormones. The Committee also adopted guidelines to the formulation of reagents and kits for the immunoassay of hormones and approved a report on the development of national systems for immunoassay services.

9.33 During the year preparations for the replacement of the International Opacity Reference Preparation and of the International Standard for Diphtheria Toxoid, Plain, were studied in an international collaborative assay organized through the WHO International Laboratory for Biological Standards in Copenhagen. Since it was unlikely that an expert committee could be convened to deal with these items in the near future, the replacements were effected on the basis of agreement among the participants in the collaborative assays and on the advice of members of the WHO Expert Advisory Panel on Biological Standardization.

10. ENVIRONMENTAL HEALTH

10.1 As a result of a growing will on the part of some governments to make the protection and promotion of human health a more central issue in national and international environmental programmes, the momentum of environmental health activities in Member States has accelerated in the past few years. The work of the Organization during 1974 was aimed at strengthening collaboration between Member States and the Organization in order to sustain and increase this momentum and to bring into sharper focus the human health objectives of environmental action.

10.2 Several areas have been selected in which international collaboration can particularly contribute towards improving environmental health both in individual Member States and globally. A number of programmes have been further developed which depend on such international collaboration and which hold out promise of a better utilization of national and international resources for both scientific and operational programmes. One example is the WHO environmental health criteria programme in which an increasing number of States are collaborating to pool their scientific knowledge on the health effects of the adverse environmental conditions to which man is increasingly exposed. The first results of this programme, initiated in 1973, became available during 1974. Research information was made available by national scientific institutions; WHO compiled this information and evaluated it with the help of a number of internationally recognized scientists; and UNEP made available funds which enabled the Organization to accelerate the implementation of the programme. Another example is the WHO environmental health monitoring programme, which was reviewed in July at a consultation attended by experts from several Member States. The programme emphasizes the monitoring both of the exposure to conditions in the environment and of the corresponding health states in high-risk groups and in the general population. It is based on collaboration between the Organization and national environmental health monitoring programmes and therefore includes as a primary component the provision of advice and guidance to Member States in the establishment of the national monitoring programmes that are needed to solve national environmental health problems.

10.3 Another field of collaboration involves the application of technology for the solution of environmental health problems. Activities continued during 1974 in almost one hundred Member States to plan and implement programmes for basic community sanitation and environmental pollution control, as did activities for the promotion of the health of working populations and for ensuring correct radiation dosage in medicine. Most of the Organization's environmental health budget was allocated to this kind of activity during 1974, as in previous years, and the direct technical assistance provided under this heading was funded both from the Organization's regular budget and by UNDP. A new collaborative programme was initiated during 1974, together with UNICEF, UNDP, UNEP, IBRD, the Organization for Economic Cooperation and Development (OECD), and the International Development Research Centre of Canada, with the aim of making available technological information at the right time in the right place and emphasizing the adaptation of technology to the economic and social conditions prevailing in WHO Member States, particularly for water supply and sanitation in rural areas. Experience in the planning of better environmental health programmes and in the establishment of more effective institutions and services that has been gained in the Regions of the Americas, South-East Asia and the Eastern Mediterranean will be reviewed, and from a number of case studies it is hoped to devise improved methodology to be made available to many Member States where environmental health services are not yet adequately planned and implemented.

10.4 In May, the Twenty-seventh World Health Assembly, in resolution WHA27.49, recommended that Member States participate in these collaborative programmes; in resolution WHA27.50 it also underlined the importance of better cooperation and co-ordination both at the national and international levels. The environment issue is many-faceted, and the orientation of national and international environmental action programmes towards human health objectives depends on active collaboration and co-ordination between the various agencies concerned with public health, the environment, housing and human settlements, water resources development, rural devel-

opment, etc. Coordination at the international level is achieved through the Environment Coordination Board established under the auspices of the Administrative Committee on Coordination by United Nations General Assembly Resolution 2997 (XXVII).

10.5 Priority attention in the WHO environmental health programme was focused during 1974 on the protection of the quality of air, water and food, on health conditions of work, on radiation protection, and on the beneficial use of ionizing radiation in medicine. However, WHO's programme in environmental health is giving increasing attention to the effects of combined environmental stresses on the health of man, the early identification of new hazards originating from new technological developments, and the consequences of changing patterns in energy utilization and transportation. Related with these will be the development of adequate environmental health institutions and services and of manpower versed not only in the practical aspects of environmental health but also in the broad scientific aspects of human ecology. It must be realized, however, that any future programme in environmental health, particularly in developing countries, will be meaningful only if basic sanitation can simultaneously be improved.

Environmental health services, institutions and planning

10.6 A study carried out by WHO in 1974 dealt with the environmental health activities and services provided as a component of basic health services programmes in a number of Member States. The purposes of this study were to examine the objectives assigned to this component; to review the methods of planning, organizing, implementing and evaluating environmental health activities and services; and to determine the impact of these activities upon basic health and environmental improvement. The study showed that, while successes have been achieved in some cases, far too often the potential role and the participation of health administrations in environmental health are limited, while power, initiative and resources reside in other ministries, particularly with respect to water supply and waste disposal. The findings point, among other things, to the value of establishing departments of public health engineering in health ministries and, as appropriate, in other ministries, such as those of public works, which are engaged in large water supply, waste disposal or other environmental improvement programmes. The study also stressed the need for giving some public health training to civil engineers in other than health ministries so that they can deal with the problems of environmental health significance that they may encounter in the discharge of their functions.

As was noted at a consultation in April on the functions of the engineer in assessing and controlling environmental conditions and hazards that affect health, there is an increasing tendency to strip health organizations of their health-oriented engineers, who are relocated in agencies where the health interest may be minimal.

10.7 In resolution WHA27.50, already referred to, the Health Assembly recommended to Member States that health agencies should participate fully in the planning and implementation of national environmental health programmes and of any other national programmes that might affect man's health. The Health Assembly also requested the Director-General to collaborate with and provide assistance to the various national and international programmes, agencies and ministries, as appropriate, concerned with the improvement of the human environment. As a first move to implement this recommendation, WHO convened an interregional symposium on environmental health planning and management in Geneva in August. Modern concepts and methods for the planning, administration and control of national environmental health programmes were discussed; the participants, who were drawn from five WHO Regions, reviewed recent experience in some Latin American countries in the preparation of their first national environmental plans, and advised on the elaboration of guides on environmental health planning. They stressed that such planning was necessitated by the interdependence of the many environmental and other activities that affect health and by the fact that they compete for the resources they require. Environmental health planning was particularly important for countries with limited resources, where the maximum benefit must be derived from each unit of expenditure.

10.8 That symposium was followed by, and coordinated with, a South-East Asia regional seminar on environmental health planning and services in New Delhi in December. The seminar reviewed the status of environmental health services in the countries of the Region; defined the objectives and policies for planning such services; and considered planning methods and procedures and evaluation techniques. Among the countries in this Region to which the Organization gave assistance for the development of institutions and services for environmental health were Burma, India, Indonesia, and Thailand. In the Eastern Mediterranean Region, Afghanistan, Ethiopia and the Libyan Arab Republic are endeavouring, with WHO's assistance, to make their national environmental health programmes a part of general development plans. In the Western Pacific Region, general advisory services projects were operational in five countries and, on an

intercountry basis, in the South Pacific; environmental health was also a component of seven multidisciplinary projects.

10.9 The effectiveness of environmental health programmes is obviously affected by the skills of those who administer them. However, relatively little has been published that is of direct relevance to administrators of environmental health programmes wishing to improve their understanding of and skills in administration. A book recently issued by the Organization¹ attempts to make good this deficit. The aim of the volume is to formulate within a unified framework the concepts of planning, management and evaluation that are relevant to environmental health programmes and to apply these concepts directly to the special problems and circumstances encountered by the administrators of such programmes.

Basic community sanitation

Community water supply and wastewater disposal

10.10 Continuing emphasis was given to the provision of potable water and to sanitary wastes disposal in both urban and rural areas. Adaptation of technology to conditions in developing countries received support through small study grants directed to the use of simple techniques and of methods for utilizing local materials and skills for project implementation.

10.11 Reference has already been made (paragraph 10.3) to the new collaborative programme with UNICEF, UNDP, UNEP, IBRD, OECD, and the International Development Research Centre of Canada. In this programme an *ad hoc* Working Group on Rural Potable Water Supply and Sanitation was formed, WHO providing the secretariat. The group sponsored a study of the technology involved, of its application, and of the social or cultural factors that often hamper the application of even tried and proved technical methods. A number of activities that could usefully be undertaken were identified and a review was made of institutes in developing countries where they might be carried out.

10.12 In collaboration with the Water Research Centre, Medmenham, United Kingdom, a pilot programme for monitoring deleterious substances in drinking-water was prepared during the year.

10.13 Among the research supported by WHO in connexion with water supply and wastes disposal, mention may be made of studies into the improved use

of bamboo as a piping material for simple water systems (by the University of Massachusetts, USA); trials of night-soil disposal methods, including digestion and treatment of night soil in oxidation ponds (Dong A University, Republic of Korea); study of national capabilities for water supply and sanitation with respect to the production of equipment and supplies and the availability of manpower (Middle East Technical University, Turkey); investigation of hand pumps and developmental work on a new concept for manual pumping of water (Comité Interafricain d'Etudes Hydrauliques, Ouagadougou); development of a manually operated water pump with high lifting capacity to supply raw water at the inlet of small village water treatment plants (Asian Institute of Technology, Bangkok); and investigation of the health problems associated with pilot studies on the disposal of animal and poultry manures in Hong Kong (a UNDP-assisted project).

10.14 Guidelines for the development of more efficient national information systems to serve planning, programming and evaluation needs in community water supply and wastes disposal have been drawn up and were reviewed at a meeting of experts in Geneva in November. One of their purposes is to serve as training material for courses for senior national personnel. They were also presented at a workshop on information management for community water supply and sanitation organized by the National Environmental Engineering Research Institute, Nagpur, India (NEERI)² in December, and the Institute was advised on the development of appropriate information systems at the national and regional levels.

10.15 In view of the necessity, particularly in developing countries, not only to develop additional water resources but to maintain the safe quality of water from all sources, the Organization is undertaking the issue of a number of appropriate guides. Among these is one on slow sand filtration³—by no means a new system of water treatment but a simple, cheap and reliable one that is well suited to the local skills and materials available in developing countries and very efficient in removing bacterial contamination. The Government of the Netherlands has made a special contribution towards pilot studies for the further development of slow sand filters; these will be conducted by several institutions under the coordination of the International Reference Centre for Community Water Supply, The Hague, and the above publication will serve as a basis

¹ Schaefer, M. (1974) *Administration of environmental health programmes: a systems view*, Geneva, World Health Organization (Public Health Papers, No. 59).

² A WHO Collaborating Centre formerly known as the Central Public Health Engineering Research Institute (CPHERI).

³ Huisman, L. & Wood, W. E. (1974) *Slow sand filtration*, Geneva, World Health Organization.

for the work. The Government has also increased its contribution to the Centre to permit a considerable expansion of its programme.

10.16 In the African Region, where some 20 health service development projects include environmental health activities, an aim for 1980 is the supply of safe water to 35% of people in the Region and the provision of sanitary excreta disposal facilities for 50% of this group. The work during the year in Kenya and Togo illustrates the progress being made in rural areas: in the former country, 32 new water supply systems were developed, bringing the total built with WHO and UNICEF assistance to 297; and in the latter, 161 latrines, 22 wells, 7 water tanks and 2 dams were built with WHO assistance in the 12 months up to mid 1974. Particular efforts were made in the drought-affected sub-Saharan Sahel zone to introduce simple but indispensable measures for improving sanitation; these have enhanced the effect of other health measures.

10.17 Up to the end of 1974 an investment of more than \$4000 million had been committed by the countries of the Region of the Americas for construction or expansion of water and sewerage works; one-third of this amount was contributed by the international and bilateral credit agencies, the remaining two-thirds being allocated from national sources. Of the total population of the Region, 57% have been provided with water supplies; the corresponding figure for the urban population was 79%. Only some 39% of the urban population, however, has been connected to sewerage systems, and it is estimated that about 12% of the total investment has been for rural water supply and sewerage. During the year, assistance was provided in the large-scale UNDP projects in Guyana and Surinam and for environmental sanitation and sewerage projects in Belize and Grenada. Assistance on project development was provided to nine countries as well as in connexion with a proposed project for liquid and solid wastes disposal in several Caribbean islands. The Canadian International Development Agency is participating in programmes in Belize, Jamaica, and the Caribbean, and contact was maintained with IBRD particularly in connexion with projects in Bahamas, Guyana, and Mexico.

10.18 The provision of safe water supplies to rural communities in the South-East Asia Region was the subject of the Technical Discussions at the twenty-seventh session of the Regional Committee in September; for these a study on the status of water supplies in the countries of the Region had been prepared. It showed that in 1970 hardly 10% of the rural population had access to safe water supplies, and that by 1980 this population would increase by 26% or by about 180 million persons. Despite increasing recog-

nition of its importance, rural water supply has yet to receive its due priority in the development plans of some of the countries, and national targets have yet to be finalized. In many countries, the problem has not been assessed, and the absence of a long-range plan leads to insufficient internal financing and inadequate external assistance. In most countries, the Second United Nations Development Decade global target, endorsed by the World Health Assembly, of providing adequate safe water to 25% of the rural population by 1980, does not seem attainable with the existing financial, manpower and material resources. The disposal of wastes in rural areas also requires more attention, although some countries have made impressive progress in the provision of water-seal latrines in rural areas. As regards the urban sector, too, considerably greater investment is required to meet the proposed global Second Development Decade target for 1980 of serving 60% of the urban population with house connexions and the remaining 40% from public standpipes. Assistance with community water supply and sanitation is provided in all countries of the Region through national or intercountry projects.

10.19 The statistics on the morbidity from infectious diseases demonstrate that there are still many places in the European Region (e.g., new settlements, depressed areas, thickly crowded tourist areas) with important basic sanitation problems. These have been evidenced recently by outbreaks of cholera and other waterborne diseases in the southern part of the Region, and the Organization continued to collaborate with and assist the governments concerned.

10.20 In the Eastern Mediterranean Region large rural water supply components have been included in the rehabilitation programmes for areas affected by recent natural disasters in Ethiopia and Pakistan. In Yemen a new UNDP-funded project is being formulated to strengthen the national rural water supply organization, through provision of international experts and volunteers to supplement the local manpower. Installation of semi-urban supply systems continued to make good progress in Afghanistan, Ethiopia and Yemen; and planning is in progress for a community water supply and sanitation project in Southern Sudan, but early construction activities are likely to be delayed due to difficulties in transporting supplies. More effective steps are also being taken for the adequate disposal of municipal and industrial wastewater; advice was given in Saudi Arabia in connexion with a wastewater treatment and disposal project and in Tunisia in relation to a scheme to protect from pollution and ensure the sanitation of the country's tourist zones.

10.21 WHO and UNICEF jointly rendered assistance to about one hundred rural water supply and sanitation projects. Examples include support of large-scale projects in Bangladesh, India, Indonesia and Sri Lanka in the South-East Asia Region and of country-wide programmes to improve water supply and sanitation in health facilities and schools in Laos and the Republic of Viet-Nam in the Western Pacific Region. Discussions have been held between UNICEF and WHO in an effort to streamline approaches and procedures in providing joint assistance to the developing world. Many projects on basic sanitary measures also benefited from UNDP assistance.

10.22 A practical guide has been prepared indicating simple measures that could be instituted with the resources available in developing countries for disposing of wastewater and solid wastes, for community water supply, and for sanitary food handling.¹ Such measures should help to avert or control epidemics of cholera and other enteric diseases, pending the introduction of more permanent nationwide basic sanitary services.

10.23 The Organization also provided advice to Malawi and Portugal in connexion with sanitary engineering for cholera control and gave assistance on sanitary measures in Cyprus within the framework of the United Nations Humanitarian Assistance to Cyprus (see also paragraph 15.43).

10.24 *Pre-investment planning.* The assistance which WHO gives to Member States in the form of pre-investment planning for water supply and sewerage is carried out in different ways. The first of these, through the cooperative programme of WHO and IBRD, includes assistance in national planning—and UNDP country programming—through *sector studies, reviews and reports*, as outlined in the Annual Report for 1973.²

10.25 In 1974 sector studies were carried out under the cooperative programme in the following countries:

African Region: United Republic of Cameroon.

Region of the Americas: Chile, Costa Rica, El Salvador, Honduras, Mexico, Nicaragua.

European Region: Turkey.

Eastern Mediterranean Region: Iran, Oman, Pakistan, Sudan.

Western Pacific Region: Republic of Korea.

10.26 Sector studies of this kind are intended to lead to national investment and the implementation of specific projects. Among the follow-up action in 1974

¹ Rajagopalan, S. (1974) *Guide to simple sanitary measures for the control of enteric diseases*, Geneva, World Health Organization.

² *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 6.30.

on earlier studies, mention may be made of the following. In the African Region, the Government of Zaire has made an increased budgetary allocation within the current five-year plan, 1973-77, of the equivalent of US \$20 million for the water and sewerage sector. It has included the equivalent of US \$400 000 in the 1974 budget for pre-investment studies in respect of priority projects. Under this funding, consultants have been appointed for studies on water supply for the cities of Lubumbashi, Kananga, Kisangani, Mbuji-Mayi, Kamina, and Mbandaka. The estimated total cost of these projects is US \$20-25 million. In Zambia, the African Development Bank has set up a mission in collaboration with WHO to formulate a project document for a survey of leakage and wastage in urban water systems. In the Region of the Americas, as a result of recommendations presented to the Government of Bolivia, a Housing and Construction Bank has been established which provides the main route for more effective utilization of all external and internal financial resources intended for the water supply and waste disposal sector, and the National Sanitation Council (CONASA) has been designated as the central organization to establish policies and criteria in this sector. In the Eastern Mediterranean Region, two UNDP project documents were prepared as a result of the sector study in Ethiopia: one concerns a UNDP preparatory assistance project in urban water supply and sewerage for non-urban communities, and the other, a community and rural water supply project.

10.27 Assistance is also given to governments in the formulation of *pre-investment projects* in water supply and sewerage. The missions that prepare the projects are normally financed by UNDP, but in some instances by IBRD, the regional development banks, and bilateral assistance agencies. The projects may relate to water supply and waste disposal in large cities, but more and more emphasis is being placed on the provision of these facilities in rural areas, and wherever possible, with simplified methodology suited to the technological level of the country concerned. The actual execution of the projects by WHO is normally financed by UNDP. Here again, however, regional banks and bilateral assistance agencies are showing more interest.

10.28 Pre-investment studies were in operation in the following countries or areas during 1974:

African Region: Burundi, Central African Republic, Gabon, Gambia, Ghana, Kenya (2 projects), Madagascar, Rwanda, Senegal.

Region of the Americas: Guyana.

South-East Asia Region: Indonesia (2 projects).

European Region: Algeria, Yugoslavia.

Eastern Mediterranean Region: Bahrain, Iran, Iraq, Lebanon, Pakistan, Yemen (2 projects).

Western Pacific Region: Khmer Republic (Phnom-Penh), Republic of Viet-Nam, Lower Mekong Basin.

10.29 Projects in the following countries were completed during 1974, and loans have been negotiated by governments with the lending agencies:

	<i>Investment resulting</i>	
	<i>External sources</i> US \$ (million)	<i>Internal sources</i> US \$ (million)
Afghanistan	8.00	
Iraq (Phase I)		70.00
Nepal	7.80	2.60
Senegal	10.25	
Yemen	6.25	0.59

Interpreted in human terms, this financial expression means the supplying of water and/or sewerage facilities to about six million people who lacked them and were therefore exposed to the public health risks associated with such lack. This is, of course, additional to the amount of approximately US \$300 million already invested the world over following the completion of previous pre-investment projects.

10.30 Negotiations were in progress in 1974 with the African Development Bank for the establishment of a cooperative programme encompassing the formulation, pre-appraisal and execution of projects in water supply and sewerage in Africa. Under an *ad hoc* arrangement in anticipation of the signature of a memorandum of understanding, missions have been carried out in Central African Republic, Chad, Lesotho, Senegal and Zambia.

Solid wastes

10.31 The management of solid wastes is a problem of growing concern not only in the industrialized countries but also in the large urban areas of developing countries as a result of the increased volume and the complex nature of wastes produced. In both the South-East Asia and Eastern Mediterranean Regions assistance has been supplied to governments for the planning and development of solid wastes disposal facilities—for instance, to the Governments of Bangladesh, India, Iran, Iraq and Jordan. A regional seminar on environmental pollution, that was held in October-November in Bangkok jointly with the Government of Thailand, concentrated particularly on the management of solid wastes. In the Region of the Americas, advisory services were provided in Brazil, Chile, Colombia and Costa Rica; and in the Bahamas assistance was given to organize solid wastes collection and disposal in the framework of a new UNDP-funded project.

Housing and human settlements

10.32 Public health elements of human settlements and housing represent a considerable part of any sanitation programme. Following the Stockholm Conference on the Human Environment, which stimulated recognition of the influence of man's dwelling and residential environment on his health, WHO's programme in this field is being accelerated, notably with financial assistance from UNEP, and four new projects were initiated in 1974. Three of these were assisted by UNEP; they concern the drafting of guidelines for the planned prevention of health hazards in transitional settlements, the preparation of minimum requirements for basic sanitary services in human settlements in developing countries, and the development of environmental health criteria for the planning of residential environment and housing. The fourth project is to develop guidelines on the hygienic aspects of water supply and wastes disposal in buildings.

10.33 Liaison was strengthened with the United Nations Centre for Housing, Building and Planning, particularly in connexion with the third project just mentioned, and through WHO participation in an interregional seminar on low-cost technology in building organized by the Centre in Budapest in March. WHO also participated in the annual meeting of the International Federation for Housing and Planning in Vienna in August.

10.34 In the Americas the Inter-Agency Committee on Housing and Urban Development (on which the Organization is represented along with the United Nations, the Organization of American States, the Inter-American Development Bank, and USAID) is undertaking a pilot project for the betterment of slums and areas on the outskirts of large cities; this project was in operation in Colombia, Ecuador, El Salvador, Mexico, Peru and Venezuela during the year. The Pan American Centre for Sanitary Engineering and Environmental Sciences participates in the work of this Committee and also provided assistance to seven countries in connexion with physical planning and the settlement of new areas, particularly in relation to river basin development programmes.

Health and sanitation in international traffic

10.35 The eighteenth report of the Committee on the International Surveillance of Communicable Diseases,¹ approved in May by the Twenty-seventh World Health Assembly in resolution WHA27.45, recognized that health administrations could not by themselves

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 217, Annex 8.

supervise all catering, watering and wastes disposal facilities and therefore recommended that close working relationships should be maintained with port and airport administrations, airlines, shipping companies and trade associations. The Health Assembly itself also recommended in resolution WHA27.46 that close contact be maintained by WHO with international traffic organizations to promote the implementation and coordination of activities aimed at improving the safety of food and water and the handling of wastes, and requested the preparation of appropriate guidance materials for the use of health and other agencies in this field. As a first step, a consultation was held in December to define the health areas of common interest or concern to organizations engaged in international traffic, and to consider their respective responsibilities. The question of how to ensure that the existing health provisions of these bodies are fully implemented was also discussed. It was considered that management motivation should be created and sustained in all industries related to international traffic and tourism. Intergovernmental and international nongovernmental organizations and professional bodies concerned with transport and travel were represented.

10.36 To provide guidance for health and other organizations concerned with international traffic and in response to concern expressed by, *inter alia*, the Regional Committee for the Western Pacific and the Executive Board, the Organization revised and brought up to date the *Guide to Hygiene and Sanitation in Aviation* with a view to its earliest possible publication.

Environmental health criteria and evaluation of effects on health

10.37 Intensified research aimed both at a better identification and characterization of hazardous environmental factors and at a clearer understanding of the response of man to such influences is urgently needed to provide a sound scientific basis for the assessment of the risks and benefits of modern ways of life. In order to review the present state of knowledge on environmental epidemiology and toxicology, WHO cosponsored with the Commission of the European Communities and the United States Environmental Protection Agency an international symposium on recent advances in the assessment of the health effects of environmental pollution, which took place in Paris in June. There were almost 700 participants from 50 countries and some 170 papers were presented, covering methods for measuring pollutant levels in the environment and in human tissues, environmental health monitoring, epidemiological studies, and experimental research into the health-related biological effects of environmental pollutants. A plenary dis-

cussion was held on the scientific data base required for decisions on how to protect human health. Reviews were presented on the situation in this field, including such topics as the interactions of environmental pollutants, perspectives in the environmental toxicology of trace metals, and psychophysiological aspects of environmental health effects. Papers were also presented on the WHO-sponsored studies in Europe on the long-term effects of air pollution on children's health (see paragraph 10.44) and on the objectives and the scope of the WHO environmental health criteria programme. This symposium contributed considerably to providing a scientific basis for the establishment of environmental health criteria for pollutants and hazards, and brought out the urgent need to improve methods used for the assessment of human exposure and for research into the biological responses to environmental pollutants and hazards.

10.38 The WHO environmental health criteria programme, actively supported by UNEP, made substantial progress during the year. A major objective of the programme is the preparation of criteria documents, i.e., critical reviews of the available information on exposure to specific environmental pollutants and hazards and of the effects of such exposure on man's health. The programme stresses the need for an integrated approach to the assessment of health effects, taking into account all the pathways of exposure—air, water, food, and the occupational, home and recreational environment—in order to arrive at an estimate of the total exposure on the basis of which, whenever possible, guidelines will be given for primary protection standards, i.e., for acceptable maximum levels (or intakes) of the pollutants in the target (human organism or population groups), or some part thereof, under specified circumstances. Two approaches have been used: (a) the consolidation of national reviews of pollutants demanding immediate attention and subsequent review of the draft criteria documents by groups of experts; and (b) the preparation of draft criteria documents for comment by national laboratories, followed by a review by groups of experts. The success of this programme depends largely on an active collaboration of Member States, and in May the Twenty-seventh World Health Assembly in its resolution WHA27.49 again recommended that Member States collaborate with WHO in this field and in the exchange of information on the prevention and control of health risks resulting from the environment. More than 30 countries have so far responded to the invitation to participate in the programme. Active participation in the preparation of reviews of work done in a given country on health effects of environmental pollutants has, however,

been limited to only 12 countries, which provided national contributions to the criteria documents on mycotoxins, polychlorinated biphenyls, nitrates and nitrites, and manganese. Draft criteria documents have been completed for mercury, cadmium, lead, asbestos, oxides of nitrogen, and carbon disulfide, as well as for noise, and circulated to a number of Member States for comments. Special reviews on research into the health effects of asbestos and lead in Eastern European countries have been prepared in collaboration with WHO by two institutions in Bulgaria and Poland respectively.

10.39 At home, in industry, in agriculture, and elsewhere man uses about half a million different chemical substances. Even though only 10 000 or so of these are produced annually in quantities of between 500 and 1 000 000 kilograms, that still amounts to a vast potential for pollution or the creation of hazards to health. Advances in technology add daily to these environmental hazards, which are represented not only by chemical substances but also by various forms of energy (ionizing and non-ionizing radiation, noise and vibrations, heat). For these reasons, a system for the early identification of new or potential health hazards to the environment needs to be established and reliable predictive mechanisms are required; it is obviously unsatisfactory to wait for reports to show that damage has already been done to man's health. Accordingly, a study group on health hazards from new environmental pollutants was convened in Geneva in September. The group reviewed the existing methods for identification of potential environmental pollution problems and related health hazards, and assessed their potential value and limitations. The methods discussed included technological surveillance and forecasting, toxicological data banks and registers of new chemicals, and warning systems for adverse environmental effects on health (regulatory systems, registries of specific morbidity data, occupational health experience and reports on accidental poisonings, rapid laboratory bioassays for assessing potential toxicity of new chemicals, and the relationship between chemical structure and biological activity). In addition, the study group reviewed the environmental health impact of energy production and use, some new developments in materials technology (new and unusual elements and new uses of familiar elements, fire retardants for fabrics and plastics, and the use of photosensitizers in plastics and pesticides), and recent advances in chemical pest control and their impact on man's health.

10.40 Another approach to the prevention of environmental pollution is through the review of specific potential pollutants and hazards, selected for such

considerations as their possible adverse effects on human health (particularly irreversible or chronic effects such as mutagenesis, neurotoxicity, carcinogenesis, and embryotoxicity including teratogenicity); their ubiquity or abundance in man's environment; their persistence and the environmental transformations or metabolic alterations they bring about; and the size and type of population groups potentially exposed to them. As a part of this programme, a group of experts met during the year (with UNEP support) to review the production, the present and future uses, and the available information on the toxicity of molybdenum, selenium and tellurium. They completed the reviews on tellurium and molybdenum, and proposed that selenium be further studied with a view to preparing a criteria document. Draft preliminary reviews have also been prepared on the environmental health aspects of germanium, titanium and tin.

Environmental health monitoring

10.41 In addition to the use of environmental health criteria, the information yielded by environmental health monitoring is essential for the taking of decisions on the environmental quality needed to protect, improve and maintain health and well-being. A meeting on the WHO environmental health monitoring programme was held in Geneva in July at which its scope and content were reviewed and suggestions made for its implementation through international collaboration. In the past, WHO activities in environmental monitoring and control were carried out with emphasis on each of the different environmental media and conditions (air, water, food, the work environment). This approach was justified from the practical and administrative point of view. However, since man is exposed to environmental pollutants in air, water, food, at work, at home, and during his recreational activities, integrated monitoring systems have been proposed to determine the total exposure and to assess whether the populations at highest risk are exposed to concentrations that are sufficiently high and/or of sufficient duration to induce either prompt, delayed or chronic adverse effects. The advantages of an integrated monitoring system are obvious where multimedia pollutants such as certain radionuclides, pesticides, and toxic metals (lead, cadmium, mercury) are concerned; exposure to these may occur through the skin, by inhalation, or by ingestion. It is also important to know the critical pollutant pathways from the source to the receptor and the physical and chemical transformations that these pollutants may undergo. By monitoring the sources of pollution, the origins of the pollutants and the amounts contributed by each source can be identified, so that emissions

inventories can be compiled as the first phase in the complex process of pollution control. A basis for further control measures is provided by monitoring the subsequent stages along the critical pathways.

10.42 The meeting also stressed that the primary objectives of the WHO programme in environmental health monitoring are to advise and assist Member States in their efforts to develop national monitoring systems that will give the information required for regulatory action to protect human health; to document the effects on health of changes in environmental quality; and to evaluate the effectiveness of control programmes and the progress towards achieving improved environmental quality. A suitably designed environmental health monitoring programme should provide a warning system to prevent or reduce adverse effects on health. The meeting emphasized the need to collate, evaluate, and interpret selected information on changes in environmental quality that affect health. This part of the programme is based on data furnished by national institutions and it is designed to strengthen the Global Environmental Monitoring System (GEMS) of UNEP and other Earthwatch components by emphasizing the health implications of changes in environmental quality; to improve the information base for the WHO environmental health criteria programme and similar international activities; and to assist in the planning and implementation of studies on health effects that are carried out by Member States.

10.43 A project has also been started to develop with UNEP support a Pan American Centre for Human Ecology and Health.

Measures directed to specific problems and population groups

Air and water

10.44 In the European Region, a working group on chronic respiratory diseases in children in relation to *air pollution* was convened in Düsseldorf, Federal Republic of Germany, in April to review the results so far obtained by the national projects carried out in several European countries on the basis of the protocol adopted by the previous working groups in 1972 and 1973. In all the countries, a somewhat higher incidence of respiratory symptoms was noticed in children in highly polluted areas than in "clean air" areas but a statistically significant difference could not be established. The national reports presented showed that the intercountry comparability of the results was

not yet satisfactory. To reach clear-cut conclusions it will be necessary to organize extensive longitudinal surveys and to follow up groups of children of the same age in areas with changing air pollution levels in order to assess the effectiveness of control measures in reducing pollution. Such studies will be carried out in some countries where UNDP/WHO-assisted projects are in progress.

10.45 The health effects of air pollution have received attention in other Regions as well. For example in the South-East Asia Region assistance was given to India in order to define research projects on this subject. Within the framework of an international congress on asthma, bronchitis and allied conditions that was held in November in New Delhi, WHO cosponsored a plenary session on air pollution in relation to respiratory diseases.

10.46 Comparable methods for epidemiological studies are essential to improve the quality of data on the health effects of environmental pollutants. The WHO Collaborating Centre on Clinical and Epidemiological Aspects of Air Pollution, London, is preparing a manual on epidemiological methods as applied to environmental pollution studies, stressing the principles of such studies, the assessment of environmental exposure, the choice of population groups and of specific health indicators, statistical procedures for linking health indicators and exposure data, and the interpretation of results. A working group that met in Copenhagen in September discussed the epidemiological surveillance of the long-term effects of environmental hazards, and another that met in Moscow in November reviewed methods for the study of the biological effects of pollutants.

10.47 The air pollution monitoring programme, initiated several years ago, is for the present concentrated on the measurement of sulfur dioxide and suspended particulate matter in urban areas and around major industrial centres. Thirteen Member States participated by supplying raw data which were analysed by the WHO International Reference Centre on Air Pollution Control at Research Triangle Park, North Carolina, USA. The Organization continued to supply specialized equipment for calibration of methods to the participating national laboratories. The number of stations in the Pan American Air Pollution Monitoring Network continued to increase and there are now 86 that measure suspended and settleable dust and sulfur dioxide. In addition to its other functions, the Pan American Centre for Sanitary Engineering and Environmental Sciences in Lima (CEPIS) now also serves as a WHO centre on environmental pollution

monitoring in the Americas, although for the time being its primary concern in this respect is with air pollution.

10.48 A meeting on the effects on health of specific air pollutants from industrial emissions took place in Geneva in November in order to identify the pollutants meriting priority attention. The participants discussed methods for identifying specific air pollutants, including emission inventories, and air pollution emission factors (i.e., estimated figures) for specific technological processes; air quality surveys in industrial areas; estimation of losses of raw materials, intermediates and by-products; and the use of occupational hazards inventories in identifying potential air pollutants. The industries concerned with chemical processing, food and agriculture, metallurgy, and petroleum were among the air pollution sources reviewed. The technology for the control of the priority pollutants singled out was assessed.

10.49 In the European Region a working group on pollution by lead and other non-ferrous metallurgical industries met in Brussels in July. A manual on air quality management in Europe has been completed and one on industrial air pollutants is being prepared in cooperation with the Economic Commission for Europe.

10.50 A programme of *water quality* monitoring as a part of the overall health-related environmental monitoring programme was defined during the year with financial assistance from UNEP. WHO and UNESCO provided the technical secretariat for an editorial panel meeting in Geneva in November to undertake the technical editing of a draft guidebook on hydrological and other aspects of water quality surveys prepared by a working group established within the framework of the International Hydrological Decade. Future cooperative programmes in hydrology were discussed in September in Paris at the International Conference on the Results of the International Hydrological Decade and on Future Programmes in Hydrology, organized by UNESCO and in which WHO participated.

10.51 A WHO Collaborating Centre for Surface and Ground Water Quality was designated at the Canada Centre for Inland Waters in Burlington, Ontario. Among the main functions of this centre, which is also supported by the Canadian Government, are the evaluation and development of methods for water quality assessment, technical support to field projects as required, and the development of manuals for training programmes. As its first task, it has drafted a guide to water quality management.

10.52 A number of meetings concerned with the quality of water were held during the year in the European Region. For instance, a working group that met in Budapest discussed automatic monitoring and analysis of water; another, in Prague, addressed itself to the physical and chemical examination of water; and a third, in Koblenz, Federal Republic of Germany, considered the design of measurement and sampling programmes and data processing. An intercalibration programme was organized in collaboration with the Danish Water Institute, with the participation of about 30 laboratories in 18 countries; the procedures compared were those for pH, electrical conductance, alkalinity and chlorides.

10.53 Among the field projects on the quality of inland water pollution control carried out in the European Region, particular mention may be made of a UNDP/WHO-assisted project in Hungary. The project aims at developing a rational basis for planned investment in water quality improvements, and a special management study was conducted on project planning and monitoring, which will serve as a model for similar water pollution projects in other countries; during 1974, river water quality monitoring stations became operational.

10.54 In the European Region, as elsewhere, some of the most significant water pollution problems reach beyond national boundaries, and an initial study into water pollution within the Danube river basin (assisted by UNEP) has begun in coordination with national projects already in operation in the riparian countries. A working group met in Bilthoven, Netherlands, in December to review the present ecological situation in the Rhine, the programmes in progress and the studies planned for the future.

10.55 Discharges of waste and pollutants from land-based sources, waste disposal from ships, and accidental pollution in the course of transport by sea have rapidly aggravated the problem of pollution of *coastal waters*. This is a cause of increasing concern to public health authorities both because of the direct effects on health and because of the contamination of marine food products. Several years ago, WHO initiated an assessment of the effects on health of polluted coastal waters. Arising from this, a health criteria document on the quality of coastal waters has been drafted in collaboration with Yale University, USA, to provide a scientific basis for the establishment of national standards and control programmes. The Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP), of which WHO is one of the sponsoring agencies, held its sixth session at WHO headquarters

in March, when it discussed *inter alia* the principles for developing coastal water quality criteria. It also discussed the effects of oil on the marine environment, the specification of parameters for marine pollution monitoring, and the selection of sites for the disposal of waste into the sea.

10.56 Many projects dealing with waste disposal in large metropolitan areas involve the discharge of waste into the sea near by. Considerable attention has been paid to this aspect of environmental pollution, particularly in Europe and the Mediterranean area, where WHO is collaborating with Member States on the control of land-based coastal pollution sources and in the study of coastal waters and beaches in the North and Baltic Seas and the Mediterranean. These activities concern metropolitan areas directly bordering the Mediterranean (for example, Athens, Beirut, and Istanbul) or Atlantic coastal areas (such as Rabat-Sali in Morocco and San Sebastian in Spain), and the methodology developed will be applied elsewhere. Some projects are being conducted at the national level (for example, in Algeria, Lebanon and Malta) or in connexion with programmes of regional development assisted by agencies other than WHO (as in Yugoslavia). Two projects have already attracted investment by IBRD and further support from this source is being sought.

10.57 Pollution of the Mediterranean was one of the problems to which the Directing Council of UNEP gave priority at its second session, in March. A task force set up by UNEP in which WHO participates met twice during the year to prepare, for submission to an intergovernmental meeting, a draft plan of action covering comprehensive planning for coastal areas, research and monitoring, and framework conventions and protocols.

10.58 The ecological aspects of coastal pollution in specific geographical areas in the European Region were reviewed at various WHO meetings during the year—for instance, in August at Göteborg, Sweden, when progress of the Oslo Fjord pilot project on studies of sublethal effects on marine organisms was reviewed by a steering committee; and in December at Wageningen, Netherlands, when a working group summarized the studies of sublethal effects on organisms in the Wadden Sea and compared the results with the experience gained so far in the Oslo Fjord study. Another working group met in Bilthoven, Netherlands, in November to discuss guides and criteria for recreational quality of beaches and coastal waters in the European Region.

10.59 Although *pollution of the environment as a whole* by chemicals is often thought of as primarily

a concern of the more developed countries, there are areas in developing countries where uncontrolled urban development and industrialization have created very severe problems of air and water pollution. In view of this all WHO Regions have initiated new programmes and intensified the existing ones, both through direct assistance to Member States and through intercountry activities. In Africa the emphasis is primarily on the control of water pollution and the use of chemicals in agriculture. High population densities and increased industrial development in urban areas in Latin America, as well as an indiscriminate use of pesticides and fertilizers, have created significant air, water and soil pollution and a substantial programme of environmental pollution control is in progress. In the South-East Asia Region Member States have been assisted in the development of surveillance and control surveys and in the preparation and maintenance of inventories of pollution sources. Here again problems are being created by the rapid increase in pollution from new and unplanned urban settlements, by rapid growth in industry and by changes in land use and irrigation practices. Direct assistance has also been provided in air and water pollution control, industrial wastes management and the setting up of national standards for environmental quality. In the Western Pacific Region priority has been given to intercountry educational meetings to review the current situation and trends, to pool technical knowledge and make suggestions for regional programmes. In the European Region, where there is one of the more advanced programmes in environmental pollution control, increasing emphasis has been placed in the past few years on comprehensive pollution control projects. A consultation was held in Copenhagen in June to review the achievements to date and to consider how and to what extent it would be possible to fuse together the work now specifically directed to air or water and adapt it to the changing needs of the Region. The need for coordination at country, intercountry, and interregional levels was emphasized, and priorities for further work were singled out, including intensified environmental and health monitoring, health problems arising from increasing nuclear energy production, and the pre-marketing evaluation of new chemicals.

10.60 Several new comprehensive environmental pollution control projects assisted by UNDP and executed by WHO have been initiated during the year, for example in Mexico, Spain and Turkey. A very complex project is in operation in the metropolitan area of Athens that encompasses control of coastal water pollution (see above), air pollution from heating, industry and motor vehicles, noise, and solid wastes

management. A project in Czechoslovakia deals with environmental pollution control in eight pilot areas; and in Poland, the Environmental Pollution Abatement Centre in Katowice has been established to coordinate environmental pollution control in Upper Silesia and to promote training. Similar projects are being initiated or are in operation in a number of Latin American countries, such as Venezuela (research in environmental pollution), São Paulo and the State of Guanabara in Brazil, and Chile. Smaller projects have been initiated in the Western Pacific areas (for instance, in the Republic of Viet-Nam). Most of these UNDP-assisted pollution control projects aim at increasing the national capability to cope with the pollution problems and involve assistance in terms of expertise, training and supply of equipment.

Food

10.61 The Joint FAO/WHO Expert Committee on Food Additives met in Rome in June, when it evaluated the available toxicological data on some food colours, flavouring substances, non-nutritive sweeteners, as well as a number of other food additives.¹ For some of the additives this was the first time of consideration, for others a revaluation in the light of further information.

10.62 Urticaria, asthma and other hypersensitivity reactions have been reported in man following the ingestion of certain food colours. In considering this problem, the Committee reaffirmed the view that no approval would be given for the use of a substance causing serious or widespread hypersensitivity reactions and that the hazards associated with foods containing additives causing only a low incidence or a minor hypersensitivity could be minimized by appropriate labelling.

10.63 Considerable attention was given by the Committee to the problem of non-nutritive sweeteners such as saccharin and cyclamates. For cyclamates the available evidence allowed the conclusion that they have been demonstrated to be non-carcinogenic in a variety of experimental animal species. However, the Committee was unable to arrive at a conclusion regarding the toxicity of cyclohexylamine, a metabolite of cyclamates. For saccharin, the Committee reviewed the recent data, including those on carcinogenicity, and concluded that the figure already established for the acceptable daily intake of this substance needed no modification.

10.64 The WHO Expert Committee on Pesticide Residues met jointly with the FAO Working Party on Pesticide Residues in Rome in December. The following pesticides were evaluated for the first time: amitrole, chlorothalonil, daminozide, dicloran, dodine, fenamiphos, leptophos, pirimiphos-methyl, and tecnazene. A number were also re-evaluated in the light of new data. The evaluations and recommendations for residue limits were intended to ensure the protection of the health of the consumer against potentially harmful residues of pesticides and to allow proper use of these chemicals in agriculture. The meeting also discussed certain general health hazards associated with pesticides.

10.65 The progress made towards protecting the consumer from excessive pesticide residues, along with the procedures adopted nationally and internationally to that end, were also considered in July at a symposium on this subject held during the Third International Congress on Pesticide Chemistry. WHO participated in this Congress, organized in Helsinki by the International Union of Pure and Applied Chemistry, at which occupational exposure was also reviewed (see paragraph 10.81).

10.66 The collection of data on which to base estimates of the potential daily intake of food additives and pesticide residues for the assessment of consumer hazards was extended during the year and now encompasses all pesticides for which previous joint FAO/WHO meetings on pesticide residues have established acceptable daily intake figures and residue limits. In addition, data are now being received from a fifth country for the WHO data bank and revised figures on food consumption were incorporated for the original four countries in the study.

10.67 The lead released from ceramics has caused considerable concern owing to poisoning that has resulted from the use of improperly processed ceramic ware as containers of food and beverages. An international conference on this subject was convened at WHO headquarters in November by Rutgers University, New Jersey, USA. The conference discussed problems of the regulation of glazed ceramic foodware and of lead released from glazed ceramic tableware and assessed the validity of different procedures used to determine the release of lead.

10.68 WHO's activities on food safety were brought to the attention of scientific societies in order to promote measures by which to obtain the toxicological data required by the WHO Expert Committees on Pesticide Residues and on Food Additives. The Society of Toxicology (USA) has established an *ad hoc* group that will attempt to collect such data for WHO.

¹ *Wld Hlth Org. techn. Rep. Ser.*, 1974, No. 557.

10.69 Three further information circulars concerning action taken by national health authorities to prohibit or limit the use of food additives and contaminants were transmitted to Member States during the year as part of WHO's food additive information service, established in pursuance of the Twenty-third World Health Assembly's resolution WHA23.50. Member States were also informed of the recommendation of the Joint FAO/WHO Conference on Food Additives and Contaminants (October 1973) that the food additive information circulars be widened in scope to include information on food contaminants.

10.70 During the year the Organization dealt with an increasing number of inquiries on the safety of food additives, pesticide residues, irradiated food, food contaminants and naturally occurring toxicants in food from national regulatory authorities and scientists from academic and industrial circles. The problems raised included threshold levels of aflatoxins with respect to their carcinogenicity, the toxic effect on the myocardium of certain long-chain fatty acids in rapeseed and other oils, and the health significance of physiologically active amines in certain common foods.

10.71 There is today an increasing awareness by many countries of the deficiencies in their existing food control structures. In particular, although there are food control laws in most developing countries, they are often inadequate to deal with modern problems associated with the processing, distribution, handling and storage of food. There is therefore a need, at the international level, to encourage and assist nations to review and bring up to date their present legislation and regulations, and to assist developing countries to strengthen their food control infrastructures. As one activity in the Joint FAO/WHO Food Standards Programme, a survey of codes and ordinances pertaining to catering establishments has been completed and a draft model code for catering establishments has been established.

10.72 The Codex Alimentarius Commission, the principal organ of the FAO/WHO Food Standards Programme, has 108 members and is responsible for the preparation of food standards. During the year, four Recommended International Standards on sugars, fruit juices and foods for special dietary uses were sent to WHO Member States. In addition, one Recommended Method for sampling plans for prepackaged foods, and a Recommended International Code of Hygienic Practice for Tree Nuts were despatched. Since 1970 a total of 64 Recommended International Standards have been sent to Member States for acceptance.

10.73 The tenth session of the Codex Alimentarius Commission was held in Rome in July. The meeting was preceded by the twentieth session of the Executive Committee of the Commission and the first session of the Coordinating Committee for Africa. Among the issues that received the Commission's attention were the formation and role of regional coordinating committees; the responsibilities of commodity committees *vis-à-vis* the Codex Committee on Food Additives regarding the need for an additive; the health claims that appear in the Draft Standard for Natural Mineral Waters; the amended procedure for the acceptance of Codex Standards, and the status of the acceptance of Codex Standards by Member States. Although some progress was reported on the acceptance of food standards, such acceptance has, in general, been slow, and the Executive Committee therefore recommended to the Commission that the matter be given top priority. At the first session of the Coordinating Committee for Africa it was stated that the main problem for the countries of the African Region when considering acceptance of food standards is the lack of appropriate modern food legislation, regulations and the machinery for enforcement. Among the meetings of various Codex Committees during the year was the first meeting, in February, of a new committee—the Codex Committee on Edible Ices. As part of the activities of the Food Standards Programme, microbiological food standards are being developed and a short advisory meeting of food microbiology experts was held following the session of the Codex Committee on Food Hygiene.

10.74 In the Western Pacific Region, a long-term advisory services project in food hygiene started during the year in the Republic of Korea. Food hygiene activities, especially training of food handlers, were also carried out within the framework of broader projects in several other countries or territories of the same Region.

10.75 As part of the integrated WHO health and environment programme, the Organization in 1973, along with FAO, formulated proposals for the development of an internationally coordinated programme for monitoring food contaminants, and UNEP agreed to provide financial support for pre-programme activities in the first instance. As the work is to be based on national food contaminant monitoring activities, preliminary visits were made in 1974 to 13 countries where such monitoring is done. The data gathered from these visits were considered at a meeting in October at which the contaminants to be included in the international programme were selected and their sampling and methods of analysis were considered.

10.76 A further joint proposal with FAO for the continuation of the programme was submitted to UNEP. This proposal covers such activities as the preparation of guidelines for establishing or strengthening a national monitoring system and undertaking national food consumption surveys in order to calculate intakes of contaminants in food; training, to assist governments in developing the capability to conduct monitoring studies; and the international exchange of information from countries that are already monitoring food contamination.

10.77 The International Food Irradiation Project was launched in 1971 jointly by IAEA, FAO and the Nuclear Energy Agency of the Organization for Economic Cooperation and Development, with WHO acting in an advisory capacity. A meeting was convened by WHO in April/May to review the relevant scientific data on irradiated food and the work of the project. Recommendations for the testing of the wholesomeness of irradiated food were elaborated and future areas of research identified.

Health of working populations

10.78 Many of the biological and pathophysiological changes that occur after exposure to physical or chemical hazards are reversible if noticed quickly and dealt with promptly. Occupational health practice provides an excellent setting in which to recognize both hazards and their effects at an early stage, and a meeting of a study group in December afforded the Organization an opportunity for the first review of its kind of the early detection of health impairment in occupational exposure to health hazards. The group drew up guidelines for occupational health physicians who carry out periodic examinations of industrial workers and pointed out the gaps in knowledge about the early manifestations of disease affecting working populations. Indicators of deviation from normal health as a result of exposure to physical and chemical agents were identified, and the general bases for defining health and health impairment indices were outlined. Many of the tests used to reveal early health impairment require sophisticated techniques and apparatus that may not be available in developing countries; the group reviewed present methods for the detection of reversible precursors of disease, recommended simple methods for use with certain types of exposure, and explored the possibility of simplifying others. Syndromes known to be essentially related to occupation, those that may be partly so related, and others that may be aggravated by working conditions were discussed in connexion both with the long-term results of exposure to different substances and with the early manifestations.

10.79 With the needs of countries in the course of industrialization in mind, the Organization prepared guidelines for carrying out field surveys of occupational health problems and concerning the instrumentation required for occupational hygiene evaluation, emphasis being placed upon simple methodology and the provision of satisfactory information with respect to the type of control measures required.

10.80 In the research programme on the epidemiology of occupational exposure to chemical and physical hazards, the research on exposure to carbon disulfide and hydrogen sulfide in Egypt was concluded, with results indicating neurological and peripheral muscular changes among workers exposed to these substances in the viscose rayon industry. Studies at the Institute of Occupational Health in Belgrade concentrated on the methodology for the detection of metabolites in exposure to carbon disulfide, while those at the Institute of Medicine in Bucharest were on the hormonal changes, particularly growth hormone, associated with long-term exposure to carbon disulfide.

10.81 At the Third International Congress on Pesticide Chemistry (see paragraph 10.65) WHO presented the results of research on occupational exposure to pesticides in Kenya and Sudan, where it has been suggested that the combined exposure of workers to pesticides and to heat stress may influence the magnitude of the effects of both and that the toxic effects of pesticides may be aggravated in malnourished persons. The Organization also participated in an international conference on occupational health organized in Geneva in October by the International Federation of Chemical and General Workers' Unions; international activities, and particularly those of WHO, in occupational health were reviewed and the conference demonstrated the interest of industrial workers in participating in preventive occupational health programmes.

10.82 A number of other instances may be cited of WHO's activities in connexion with the health problems of working populations associated with industrialization.¹ A research programme on psychosomatic disease among migrant workers in Singapore in relation to monotonous tasks and different psychosocial stimuli has been started with the Industrial Health Unit in that country. The fourth international Symposium on Society, Stress and Disease, cosponsored by WHO and the University of Uppsala, was held in Stockholm in June; its theme was "Working Life" and ILO also participated. The symposium

¹ Radiation protection in certain mining industries is considered in paragraph 10.109.

reviewed the psychosocial environmental factors at the place of work influencing health, and the types of jobs involving stress. WHO also participated in the CIBA Foundation Conference on Health and Industrial Growth in London in September, when the problems in developing countries were strongly emphasized.

10.83 Studies conducted in collaboration with the Research Institute of Occupational Hygiene and Industrial Safety in Sofia on the effects of combined hazardous conditions at work have dealt with the effects of fatigue on the reaction to heat stress, hormonal and enzymatic changes associated with shift work and noise, and the effects of sound stimuli on mental work. The research continues with a view to providing guidelines for the evaluation of combined stressors in the work environment and their health effects.

10.84 The Organization's concern to improve occupational health services by helping to build up the appropriate national manpower was manifested during the year by a number of courses and other training activities in many parts of the world; some of these are shown in Table 2.

10.85 In the African Region, WHO provided assistance to Dahomey, Gabon, Guinea, Mali, and Togo to investigate health problems in industry, agriculture and mining, to develop adequate legislation and to establish basic occupational health services for workers and their families. WHO participated in the work of the First African Congress on the Prevention of Occupational Risks, organized in November by the Algerian Government and the Organization of African Unity to review and harmonize occupational health standards in rapidly industrializing African countries.

10.86 In the Region of the Americas assistance was provided in Bolivia, Chile, Cuba, Guatemala, and Uruguay. In addition, a long-term programme for the Andean countries was prepared aimed at the development in Bolivia, Chile, Colombia, Ecuador, Peru and Venezuela of industrial medical and occupational hygiene; the programme involves the establishment of norms, training, and the harmonization of legislation in the countries concerned. The health problems of workers in some of these countries are still of considerable magnitude; in Bolivia, for example, where there is a UNDP/WHO-assisted project in occupational health, about 23% of 15 000 miners are affected by disabling silicosis, and the frequency of occupational accidents has not declined in the past 10 years.

10.87 In South-East Asia, Burma received assistance in strengthening its Occupational Health Unit at the

Ministry of Public Health which carries out a comprehensive health care programme for workers that includes not only the prevention of occupational diseases and injuries but also the control of communicable diseases and malnutrition; Burma also received assistance in developing an occupational toxicology programme. WHO also assisted Bangladesh in the conduct of a nationwide investigation of the health problems in small and large industries and agriculture, and in preparations for an occupational health care service within the basic health services; India in the development of port health services in Bombay; and Indonesia as executing agency for the large-scale UNDP-assisted project to develop occupational health centres. WHO provided advice in the preparation of a project document, with assistance from DANIDA, to help Sri Lanka in the establishment of an Institute of Occupational Safety and Health and Environmental Pollution.

10.88 Under an intercountry project in the European Region a survey of periodic medical examinations in industry has started in seven countries (Bulgaria, Czechoslovakia, France, Italy, Sweden, the United Kingdom, and the USSR) with a view to preparing a synthesis of the type of services provided to workers in large establishments and advising on further improvement of preventive medical examinations in industry. The large-scale UNDP/WHO-assisted project on industrial toxicology in Poland that was started in 1973 progressed successfully; several laboratories were established to study the toxicity of new chemicals in industry and to train research workers in carrying out epidemiological investigations and in assessing the degree of toxic exposures in industry and other workplaces.

10.89 In the Eastern Mediterranean Region, assistance was provided to Bahrain and Iraq in the development of occupational health units in the ministries of public health and in updating legislation in this field. The School of Hygiene and Public Health of the University of Teheran received assistance to develop research and field investigation facilities in occupational hygiene. Assistance was also given to Sudan, where the Ministry of Health has developed a Department of Occupational Health carrying out nationwide services in this field with special centres in different parts of the country. In Pakistan WHO helped the Occupational Health Department of the School of Public Health in Lahore to carry out field studies of the health problems of the working populations.

10.90 Occupational health in small industries was particularly stressed in the Western Pacific Region,

where it formed the subject of assistance in Fiji, Papua New Guinea, Western Samoa and American Samoa. In Malaysia, assistance was given for a seminar on the organization of industrial health services for small industries, and in the Philippines to study the health problems of workers in industries outside Manila. In Singapore, WHO helped to prepare guidelines for the practice of occupational health nursing in that country and a registry of the nurses employed by industry.

10.91 With a view to establishing a basis for decisions upon priorities in the provision of occupational health care programmes, and in accordance with resolution EB53.R23, in which the Executive Board requested that Member States be assisted in the preparation of national inventories for use in the planning and implementation of occupational health programmes, the Organization has started the collection, in a uniform manner, of information on occupational health problems and services available in Member States with a view to issuing comprehensive national and world reports.

10.92 WHO-supported studies on occupational health in small industries in a number of developing countries revealed during the year several problems requiring attention, and advice was provided on their solution—for instance, lead poisoning among workers in small industries in Teheran; inhalation of or exposure to coconut fibre dusts causing respiratory disease and skin disorders among workers in small milling plants in Sri Lanka; exposure to pesticides among workers in small formulating plants in Sudan; exposure of dock workers to toxic agents in Singapore; and exposure to dusts among textile workers in Colombia.

Accident prevention and control

10.93 The importance of accident prevention and control was strongly emphasized by the Twenty-seventh World Health Assembly in May, and recently also by the WHO Regional Committee for Europe. In resolution WHA27.59 the Health Assembly indicated *inter alia* the importance of developing improved programmes to deal with what has been increasingly referred to as a “new epidemic”. The problem of accidents is acute in the more developed countries, but it is likely to increase very rapidly in developing countries. A recent WHO study of the major causes of death in developing countries¹ shows that accidents, particularly among persons up to the age of 30 years, are probably now the largest single cause of

death, and the morbidity and socioeconomic consequences are considerable. The human factor was one of those particularly mentioned in the Health Assembly's resolution as calling for research. In October the Organization held a consultation with representatives of a number of vehicle manufacturers and appropriate nongovernmental organizations to consider the role that ergonomics and biomechanics can play in contributing to greater road traffic safety and the safer design of vehicles. They reviewed the extensive knowledge in these fields that they considered should be applied, and singled out a number of aspects on which urgent study is needed with respect to vehicle design and traffic safety. They stressed the need for education of the public—whether drivers or not—if safety measures are to be effectively applied. In the European Region, a programme was initiated during the year to identify the high-risk groups in road accidents, in collaboration with international organizations in the field of alcohol and driving.

Biomedical aspects of radiation

10.94 With the aim of improving and strengthening health services, as well as to avoid undesired, unjustified and unnecessary radiation exposure of populations, the Organization continued to lay stress on improving radiation medicine. The use of radiation in X-ray diagnosis, radiotherapy and nuclear medicine is a basic requirement for modern health services. However, the exposure of patients to radiation for medical purposes still contributes most to the man-made radiation exposure of populations and therefore needs an optimization of methods and a reduction of exposure to the extent possible without reducing the beneficial effects of these applications.

10.95 *Diagnostic radiation medicine.* The quality of radiodiagnostic services was the subject of a review mentioned in the Annual Report for 1973.² There has been little improvement since that review was made, particularly as regards small hospitals and rural areas, mainly owing to the lack of sufficiently trained physicians, physicists and technical staff. Advice for improving the situation and support for training therefore continued or was started in a number of countries, including Afghanistan, Bangladesh, Burma, Democratic Yemen, Indonesia, Iraq, Libyan Arab Republic, Philippines, Sudan, and Syrian Arab Republic.

10.96 *Radiotherapy.* Advice on radiotherapeutic services was given to Brazil, Iran, Libyan Arab

¹ *Wld Hlth statist. Rep.*, 1974, 27, No. 3-4.

² *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 6.90.

Republic, and Uganda among other countries, the main emphasis being on improving the accuracy of therapeutic applications.

10.97 With the designation in 1974 of a secondary standard radiation dosimetry laboratory in the African Region—at the Department of Radiotherapy, University of Lagos—there are now seven laboratories in the network: in Argentina, Iran, Mexico, Nigeria, Romania, Singapore and Thailand. These provide, or will shortly do so, facilities for the calibration of dosimeters and radiation sources, which is essential to proper radiation therapy but of especial difficulty. These centres also undertake research in specific problems of dosimetry in their geographical region and organize training programmes for radiologists, medical physicists and health physicists in clinical and radiation protection dosimetry. The further strengthening of these activities was discussed at a panel meeting held in Rio de Janeiro, Brazil, in collaboration with IAEA.

10.98 *IAEA/WHO postal dose intercomparison service for cobalt-60 radiotherapy.* Few radiotherapy centres in Central and South America had hitherto participated in this service. During 1974, however, their number was greatly increased, and as many as 65 centres were covered in the Region of the Americas. With 8 centres in the South-East Asia Region, 2 in the European, 15 in the Eastern Mediterranean, and 30 in the Western Pacific Regions, a total of 120 centres participated in the service during the year. Some of the results showed deviations of 20-30%, and in a very few cases of more than 50%, from the intended dose. This clearly demonstrates the importance of accurate dosimetry in radiotherapy and of the availability of experienced and adequately trained staff to make the measurements. To help towards that end, guidelines for calculating the absorbed dose in radiotherapy, related to the IAEA/WHO dose intercomparison programme and with special emphasis on cobalt-60 units, were prepared and distributed to participants, particularly in developing countries.

10.99 *Nuclear medicine and medical physics.* Over the past 15-20 years the medical application of radionuclides has developed as a separate specialty of radiation medicine, with a need for specialized training. Although the genetically significant dose to patients is low at present, it may increase to the level attained in X-ray diagnostic procedures, and it is essential that all persons engaged in nuclear medicine should be properly educated to apply radionuclides. WHO, in close collaboration with IAEA, is paying increased attention to this particular field and in this context organized a seminar on training in nuclear medicine (see Table 2). The development of medical physics, too, is hampered

by a lack of adequately trained staff and the absence of sufficient training facilities; support was therefore given in 1974 to training schools for medical physicists in India and Thailand.

10.100 *Maintenance of radiological equipment.* For lack of appropriate maintenance and repair services (particularly for diagnostic X-ray equipment) in developing countries, much valuable equipment often lies idle for long periods of time. Assistance with, or training in, maintenance was given to a number of countries in the South-East Asia Region (Burma, India, Indonesia, Mongolia, Nepal), in the Eastern Mediterranean Region (Cyprus, Ethiopia, Iran, Somalia, Sudan, Syrian Arab Republic), and in the Western Pacific (Khmer Republic, Laos, Philippines, Republic of Korea).

Environmental aspects of radiation

10.101 In seeking to contribute to reducing the radiation exposure of populations, the Organization places particular emphasis on establishing national radiation protection services that are responsible to the health authorities and include the legal aspects of radiation protection within their purview. Advice in this respect was given during the year to Argentina, Bolivia, Chile, Colombia, Costa Rica, Guatemala, Panama, and Peru in the Region of the Americas; to Burma, Indonesia, Mongolia, Sri Lanka, and Thailand in South-East Asia; to Iran, Iraq, Lebanon, Libyan Arab Republic, and Sudan in the Eastern Mediterranean Region; and to the Philippines in the Western Pacific.

10.102 The film badge service for personnel monitoring continued to be provided free of charge to WHO by the Central Protection Service against Ionizing Radiation, Le Vésinet, France, and the Institute for Radiation Protection and Environmental Health, Neuherberg, Federal Republic of Germany. The first-named supplied about 450 film badges monthly to eight countries in the Eastern Mediterranean Region and the second some 300 badges monthly also to eight countries or territories in the South-East Asia and Western Pacific Regions.

10.103 A manual on radiation protection in hospitals and general medicine is being sponsored jointly by ILO, IAEA, and WHO. It is being issued in parts, the first three of which were published or in the press during the year (those dealing with basic protection requirements,¹ unsealed sources, and X-ray diag-

¹ Braestrup, C. B. & Vikterlöf, K. J. (1974) *Manual on radiation protection in hospitals and general practice. Volume 1, Basic protection requirements*, Geneva, World Health Organization.

nosis). The manual deals with protection against ionizing radiation of patients, of occupationally exposed persons and the public as a whole, and is written for a reader having a basic general knowledge of radiation and biology. It is not intended solely for people who are directly engaged in radiation protection in hospitals and general medicine but also for government agencies, hospital managements, private practitioners, supervisors and hospital workers, training centres and others with responsibility in the subject.

10.104 The last comprehensive worldwide report on the exposure of populations to radiation from medical uses, made by UNSCEAR in 1972, clearly demonstrated the lack of comparability of national data and particularly the lack of information on medical radiation exposure in developing countries. In order to evaluate the situation, compare national surveys, and define how estimates of medical exposure can be made for regions and countries where there are measured data on gonadal exposure, a collaborative study with institutions in various countries has been started in which data from all obtainable national surveys of genetically significant doses will be banked in a computer. It is expected that technical data and dose measurements from more than 30 000 radiodiagnostic and several thousand radiotherapeutic applications will eventually be entered in the data bank.

10.105 In collaboration with the Institute for Radiation Protection and Environmental Health, Neuherberg, Federal Republic of Germany, the Organization has started, as a pilot study in the Philippines, the Republic of Korea, and Singapore, measurements for a survey of natural background radiation in the Western Pacific Region, similar to national surveys that have already been made in several industrialized countries. This survey may serve as a basis for evaluating the risk from man-made radiation sources, the number of which is expected to increase. It covers radiation dose measurements on individual members of the public as well as at places outside and inside buildings in different geographical and geological areas.

10.106 WHO collaborated with IAEA and UNEP in a seminar on the evaluation of population doses of radiation from all sources and applications of radiological safety standards to man and the environment, organized in Portorož, Yugoslavia, in May. Principles of radiation protection in relation to releases of radioactivity in the environment were emphasized, and the major sources and contributions to radiation exposure of the population were reviewed. However, it became apparent that there is a need for more information on exposure from the natural background and from medi-

cal and other applications of radiation. The Organization also collaborated at a meeting of an IAEA panel on the capacity of the environment to accept radioactive material, held in Vienna in June. Initial guidelines for the use of countries were formulated on methodology and its application.

10.107 In the research on chromosomal aberrations as biological indicators of radiation effects (being conducted through WHO Collaborating Centres for Studies on Chromosome Aberrations in Canada, the United Kingdom and the USSR, and a network of 35 collaborating laboratories throughout the world) the international intercomparison studies, and the pilot studies started in 1973, were stepped up, investigating small population groups exposed to chemicals and other environmental agents.

10.108 The disposal of high-level and alpha-bearing radioactive wastes is becoming of increasing importance with the rapid increase in nuclear power. WHO collaborated with IAEA in the first meeting of an international working group on such wastes, in Vienna in March. Experience in this area was reviewed, and recommendations were made concerning the information and action needed.

10.109 With a greater demand for nuclear fuel, there is likely to be a rapid growth in the uranium and thorium mining and milling industries. WHO collaborated with the IAEA panel on waste management in these industries that met in Ottawa in July. It was the consensus of the panel that although the population dose and environmental impacts are expected to remain limited there is need for continuing care in the planning and implementation of good practices, as well as for more research and development to ensure that the dose is kept as low as practicable. Attention to the occupational safety and health aspects of the mine workers was given at the ILO/WHO/IAEA International Symposium on Radiation Protection in Mining and Milling of Uranium and Thorium, at Bordeaux, France, in September. Principles of radiation protection in the mines, including technical and administrative measures, monitoring of the working environment, medical surveillance and waste disposal operations were reviewed.

10.110 In collaboration with the WHO International Reference Centre for Environmental Radiation at Le Vésinet, France, the intercomparison programme relating to population exposure to radiation with emphasis on dietary sources was expanded to include tritium, which may also increase in significance as a pollutant owing to the growth of nuclear power.

11. HEALTH STATISTICS

Development of health statistical services

11.1 Because of present population trends, developments in medical care and changing patterns in morbidity, there is an increasing demand for reliable health statistics information systems. In providing the flow of data sought by health planners and administrators, the assessment of health information needs and the continual evaluation of health statistical services play an important part. The selection of priorities in and appropriate methods of data collection requires close cooperation between decision-makers, statisticians and those implementing programmes.

11.2 The collection, analysis and utilization of accurate and usable data on vital and health statistics are a major priority in public health. The shortage of qualified personnel, however, or lack of coordination between producers and users of statistics, or the inadequate training of administrators and medical people in statistics still prevents many countries from attaining a satisfactory standard in their health statistics system. To help Member States to reach such a standard, WHO assists in the planning and operation of national health statistics information systems by assessing needs for and priorities in data collection, establishing advisory services and training statisticians and teachers in health statistics (see Chapter 3).

11.3 Assistance to countries was provided during the year through projects and through the award of fellowships and consultantships. The projects consisted mainly of aid in the development of basic health statistical information systems and the provision of personnel and statistical support to WHO-assisted programmes in health services and epidemiology. More than 60 such projects were in operation. The series of documents regularly being issued for the national committees on vital and health statistics provide a continuing exchange of information on national health statistical experience and on the recommendations made by WHO-sponsored meetings on such subjects as health manpower statistics, school health statistics, cost/effectiveness analysis and the methodology of teaching in health statistics.

Assistance to countries in planning and operating national health information systems

11.4 An assessment of the adequacy and impact of a health statistics information system on national health policy, national health planning and specific health programming (e.g., in family planning) carried out during 1973 in nine developing countries led to a number of conclusions about ways of providing assistance to countries. They form the basis for a model health statistics information system in Tunisia to be set up under an agreement, signed in 1974, between the Tunisian Government, the United States Government and WHO. The systems approach in planning and the evaluation of health statistical information systems were also adopted in a model for a health information system in relation to schoolchildren which is now being developed on a trial basis in the same country.

11.5 In the European Region attention was paid to methodological matters and to the collection of health data both for the assessment of the epidemiological situation and for monitoring the main health trends. Particular emphasis was placed on the integration of epidemiological activities into health planning and evaluation projects and into the organization and delivery of medical care. This approach was presented at a European Conference on National Health Planning, held in Bucharest in March, in a report on the application of epidemiology to the planning and evaluation of health services which stressed the importance of developing epidemiological techniques and methods and, as a consequence, the need for new training programmes. Emphasis was also placed on the necessity of providing planners with standardized information on disability, dependency and absenteeism as well as with standards for describing and classifying data on other aspects of the health services. In the same Region, emphasis was also placed on the development of epidemiological surveillance of the health effects of environmental hazards, in support of the programmes in environmental health and chronic diseases. Chronic respiratory disease was the subject of studies in 1974. One study revealed large differences in the mortality from respiratory disease between countries of the Region.

11.6 In the Eastern Mediterranean and Western Pacific Regions, forms were designed by WHO and used to provide for each country geographical, socio-economic and demographic data, facts on the health services and health-related work, and epidemiological, environmental and communications information. The latest data from available official publications are being compiled for distribution.

11.7 In the Western Pacific Region, services for the strengthening of vital and health statistics were further extended to enable countries and territories to obtain adequate information so as to assess the health conditions and needs of the population and to formulate their national health plans realistically. Efforts were made to develop health statistical services at various administrative levels, to improve the health and medical records systems, particularly in health centres and hospitals, and to introduce more systematic procedures for the collection, processing and analysis of health statistical data.

Environmental health statistics

11.8 Increasing activity in environmental health has led to an urgent need for statistical information. WHO has elaborated a system of environmental health statistics that stresses the integration of environmental health statistics with general health statistics, and the coordination of environmental health information, outlines the subject areas and scope of the system, and describes the sources of data and methods of collection, units of measurement and indicators. A document¹ prepared on statistics for environmental health planning and management describes information categories, data needs, sources of information, information feedback mechanisms, record linkage, data banks and statistical methods; and it stresses the need for international environmental health standards and the training of health statistical personnel in environmental health. The document served as a background paper for a WHO interregional symposium on environmental health planning and management held in Geneva in August (see paragraph 10.7).

Medical record systems

11.9 The introduction of new recording techniques has created new possibilities for the use of medical records. The further development of health services will depend to a considerable degree on the application of record linkage methodology and the use of computers in health data processing, and new approaches in medical records are being studied with WHO help

in a number of countries in the Regions of the Americas, the Eastern Mediterranean and South-East Asia. Arrangements are being made to establish a WHO collaborating centre on medical records to stimulate and coordinate research in this field and organize the exchange of information.

11.10 In the Region of the Americas, advice on the organization of medical record departments was given to hospitals in Brazil, Chile, Jamaica, Nicaragua, Panama, Paraguay and Peru, some of which were new hospitals about to be inaugurated, and the first two of six additional training courses on medical records and statistics recommended by the Ten-Year Health Plan for the Americas were instituted. In the Eastern Mediterranean Region, advice about medical records was given to a number of countries through an inter-country project, and a regional training centre in medical record science was set up in Egypt. In the South-East Asia Region, advice and assistance in the field of medical records were given to Bangladesh, India and Indonesia.

Dissemination of statistical information

11.11 International health statistics derived from data made available by Member States of WHO and from official publications of countries have been stored in a WHO data bank, which is constantly being updated. These data, in a condensed form, are published in the *World Health Statistics Annual*.

11.12 In 1974 the Organization's information service on world health statistics was reorganized with the following objectives: (1) to provide quantitative information for identifying major health problems, defining and evaluating health policy, planning health programmes and managing health services efficiently; (2) to bring producers and users of statistical information into continuous contact, as an integral part of a systematic effort to improve health statistical information systems and adjust them to changing needs; (3) to contribute to a wider and quicker dissemination of information to users, whether research or health administration workers; (4) to promote the critical appraisal, analysis and feedback use of health data in the decision-making process; and (5) to generate a better understanding of the limitations imposed upon international comparability by national practices and to define more precisely their effect on comparative studies. To attain these objectives, the programme comprises, as main elements, measures to improve the rapid dissemination and the accessibility of data, and measures to improve the utilization of data for administrative and research purposes.

¹ Available on request from Development of Health Statistical Services, World Health Organization, Geneva.

11.13 A number of studies have been published in the *World Health Statistics Report* reflecting this shift from a passive presentation of health statistics data to a more dynamic approach. They include such subjects as mortality trends in Europe, world trends in medical manpower, an evaluation of postwar mortality projections in Australia, Canada, Japan, New Zealand and the USA, and mortality projections and actual trends in selected European countries. In addition, an enlarged version of a background paper contributed by WHO to the World Population Conference in Bucharest was published in two parts, covering health aspects of population trends and prospects, and health trends and prospects, 1950-2000. In this way, the routine publication of statistical data is being supplemented by articles focusing on items of topical interest.

11.14 To speed up the collection of data, agreement was reached with a number of countries that, instead of replying to questionnaires in the traditional manner, they should send magnetic data-tapes. This approach will eliminate many of the delays inherent in the old approach.

11.15 The third biennial survey of African health demography appeared during the year, describing the situation at the end of 1973 with regard to health personnel, health manpower training institutions and the health infrastructure. Technical guidelines were also issued in the African Region for the collection and reporting of health statistics, special chapters dealing with epidemiology and hospital statistics; and a study of demographic, socioeconomic and health statistics and of the health infrastructure in some African countries was completed during the year.

11.16 Continuous collaboration was maintained with the United Nations, with particular reference to the collection, dissemination and analysis of mortality data, especially as regards assessing current patterns and improving the methodology of projection. As mentioned elsewhere, WHO also contributed to and participated in the World Population Conference; and, in preparation for that Conference, held an inter-regional meeting in Lima in February on health trends and future prospects in relation to population and development.

11.17 Field studies designed to test various methodologies for the collection of basic vital and health statistical information were carried out with the support of UNFPA as part of an endeavour to stimulate a more active approach to the gathering and dissemination of information. Steps have been taken to coordinate these activities with those of the United Nations and their regional bodies.

11.18 A working party on cancer statistics was held jointly with IARC in March. It advised, *inter alia*, on the formulation of a long-term programme in this field, the ultimate objective of which is the setting up of a worldwide cancer statistics information network. To attain this objective, guidance to countries in setting up national cancer statistics information systems is needed. It is therefore necessary to develop and test methodologies for national cancer statistics information systems, as well as to stimulate the elaboration of appropriate statistical techniques and concepts and promote the international comparability of the statistics.

11.19 During the year the present system of collecting information on health manpower was reviewed, and preparation was begun of a technical manual to guide countries in developing statistical information on manpower. The collection of statistical information on the migration of physicians and nurses and on occupational health was also reviewed. A study was initiated of ways of adapting the traditional statistics on tuberculosis to new information requirements. In relation to the monitoring of mental health needs, a protocol was elaborated for an international collaborative study of the relative merits of different systems of information management, with a view to generating data on which mental health needs can be assessed and planned for.

Health statistical methodology

11.20 Among the disease control projects to which statistical support was given during the year were clinical and epidemiological studies of trachoma in Algeria, Burma, Morocco, Syrian Arab Republic and the United Republic of Tanzania and a prospective study in Burma covering about 50 000 children, the aim of which was to evaluate the protective effect of BCG against leprosy. In this study it was planned to carry out a periodical analysis with a view to identifying epidemiological subgroups where protection appears most pronounced. In tuberculosis prevention trials in Bangalore, India, entailing a double-blind trial with follow-up in a population of about 500 000, the vaccine codes were retained in WHO and the data were continuously analysed. Statistical assistance was also given to international reference centres for the control of BCG products.

11.21 Substantial support was also given to a variety of parasitic disease projects, such as the programme for schistosomiasis control in man-made lakes in Ghana and the assessment of the effect of house spraying with fenitrothion on malaria transmission in Kenya.

Mathematical models and computer simulations were developed for the purpose of identifying the most efficient intervention strategies in malaria control. Data-based studies in Northern Nigeria were designed to permit not only validation of the models but also evaluation of actual control programmes. Work continued on the investigation of mosquito vector dynamics, particularly with regard to the determination of an optimal release strategy for sterile mosquitos in the genetic control of malaria vectors in India. WHO staff also gave lectures at international training courses, such as one on the epidemiology and control of tuberculosis. Excess deaths from influenza, pneumonia and bronchitis continued to be reported to WHO annually from ten cooperating countries. The data were analysed with a view to detecting long-term trends and seasonal variations, and the results of the analysis and computer-printed graphs were sent to the countries concerned.

11.22 In the field of noncommunicable diseases emphasis in statistical work was placed on the magnitude of the problems in the community, clarification of the natural history of the diseases, analysis of the etiological factors and evaluation of intervention measures. Use was made of multivariate analysis, discriminant and cluster analysis, and regression methods to handle the large numbers of variables involved. These methods were applied to cardiovascular disease projects studying risk factors in selected subpopulations; to the analysis of data from a melanoma register at the WHO Collaborating Centre for Evaluation of Methods of Diagnosis and Treatment of Melanoma, Milan, Italy; to the development of a connective tissue diseases register at the WHO International Reference Centre for the Study of Connective Tissue Diseases, Paris, with special attention to the problems of automatic classification techniques for diagnosis; to studies of schizophrenia and depressive patients in several countries; and to several international collaborative studies on oral health and disease and on dental health manpower problems. Follow-up studies on chronic bronchitis in Prague were completed, emphasis being placed on the evaluation of the disease in different environmental and epidemiological groups.

11.23 Statistical assistance in family health was given to collaborative studies on breast-feeding and on the short-term complications of induced abortion. Mathematical support was also provided in health planning and project formulation and in studies on human reproduction and health in ten countries. In December a consultation was held, with UNFPA assistance, on family health information systems and the potential role of computers in such systems in developing

countries. Among the main topics considered were the types of decisions faced by administrators of family health programmes and the design of information systems that would assist them in making decisions.

11.24 WHO has become increasingly involved in providing statistical assistance in operational research, systems analysis, system dynamics and computer techniques. Contact was established with the recently formed International Institute for Applied Systems Analysis, Vienna. The latter's biomedical project is expected to be of direct relevance to WHO's work, especially with regard to the essential connexions between the technical and policy levels of the overall programme.

11.25 In the African Region, governments were assisted in drawing up protocols for the collection of statistical data through surveys or from medical records of health institutions and in demonstrating modern statistical techniques in processing the data and drawing conclusions. On the basis of statistical data collected from countries in the Region, special statistical methods were developed for making valid inferences from incomplete data.

11.26 In the Region of the Americas, computer programmes have been developed for data screening and descriptive and multivariate analysis to assist ongoing technical and scientific studies. They were used in the analysis of data about the economic effects of the eradication of malaria and data from the inter-American investigation of mortality in childhood, in a study of smoking habits in eight Latin American cities, in a study of human reproduction in two communities in Peru, and in a census of resources of health institutions in Ecuador. Advisory services in sampling were provided to a project for the development of a health information system in Colombia and to a demographic survey in the State of Rio Grande do Sul in Brazil, and advisory services in computer sciences to several countries, including Colombia, Costa Rica, Peru and Venezuela, principally in relation to the data processing equipment and human resources needed for computers in the development of information systems.

International Classification of Diseases

11.27 The first draft of the ninth revision of the International Classification of Diseases, which had been circulated to Members and Associate Members during the second half of 1973, elicited numerous comments and suggestions for amendment. Opinions were mixed on the virtues of the proposal to include in the ninth revision dual classifications for certain diagnostic statements, once under etiology (to preserve

the continuity of statistics based on the underlying cause) and again under clinical manifestation (for new applications of the Classification concerned with medical care).

11.28 The WHO Expert Committee on Health Statistics met in Geneva in June to review the comments made on the proposals circulated. It endorsed the principle of dual classification and considered that it should be implemented more fully than it had been in the first draft proposals. The Expert Committee also made recommendations on other comments and suggestions received from Members. The second draft of the ninth revision incorporating the changes suggested was largely completed by the end of the year. It will be circulated to Members and Associate Members in spring 1975 and will serve as the main working paper for the International Revision Conference in the autumn.

11.29 The Expert Committee also approved the work in progress on the preparation, in collaboration with IARC, of an adaptation of the International Classification of Diseases to oncology. This is intended for use in cancer registries and other agencies specializing in cancer statistics and will contain a topographical classification of neoplasms, a morphological classification based on the Systematized Nomenclature of Pathology of the American College of Pathologists, and other parameters such as laterality and staging. A first draft of the adaptation had been prepared by the end of the year.

11.30 A WHO Scientific Group on Health Statistics Methodology related to Perinatal Events that met in Geneva in April and May made recommendations about definitions, terminology and the statistical

analysis of such events. In order to ensure that the statistics are comparable, since at present they are not because of differences in national registration requirements and viability criteria, the group recommended that both the numerator and the denominator used for the perinatal mortality rate, the early neonatal death rate and the stillbirth rate should be restricted to infants weighing 1000 g and over at birth. The group also recommended that a special form of medical certificate of cause of death should be used for perinatal deaths. The WHO Expert Committee on Health Statistics endorsed the recommendations of the scientific group with one reservation; it considered that the definition of maternal mortality should be restricted to direct and indirect obstetric deaths and should not include deaths resulting from accidental or incidental causes not related to pregnancy or its management, since it would be impossible to identify all such deaths.

11.31 The field trials of a methodology for the lay reporting of perinatal and maternal morbidity and mortality data, which have been carried out with UNFPA support, were continued in several African and Asian countries. Comparison and evaluation of the results have contributed to the solution of a number of practical and methodological difficulties. A system of application that can be adapted to local conditions has been developed.

11.32 All the countries participating in the project on the registration of pregnancies and their outcome¹ have now completed the collection of the data. A statistical analysis of the data will serve as the basis for the final report, which is in preparation.

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 8.29.

12. COORDINATION OF BIOMEDICAL RESEARCH

12.1 A report containing the Director-General's proposals on WHO's role in the development and coordination of biomedical research was submitted to the Executive Board at its fifty-third session, in January 1974, and was considered, together with the Board's comments, by the Twenty-seventh World Health Assembly in May. In its resolution WHA27.61, the Health Assembly endorsed the proposals, with particular emphasis on increased international co-operation and coordination of biomedical research activities and exchange of information by WHO through medical research councils and similar national bodies and other institutions; and on the promotion and initiation of research in developing countries and the strengthening of research and training centres in these countries, especially with respect to disease problems of importance to the area, such as parasitic infections and other endemic diseases.

12.2 In pursuance of that resolution, preparations began for a special programme for research and training in tropical diseases, which it is hoped to implement with voluntary financial support. Exploratory visits have been made to several countries in Africa to identify existing research institutions in need of assistance and to investigate the possibility of establishing a network of such institutions linked to a multidisciplinary research centre in the African Region devoted to research and training in tropical diseases, with emphasis on parasitic infections. Plans for advancing this work were considered by the WHO Advisory Committee on Medical Research in June (see paragraph 12.4 below) and were then developed in a series of meetings—including that of a planning group held in Geneva in November—of advisers and representatives of universities and laboratories involved in research and training activities in tropical diseases. The question of financial support will be discussed with a group of voluntary agencies in 1975.

12.3 Representatives of 14 medical research councils and similar national bodies attended a meeting in December to exchange information on their national policies in biomedical research, their present activities and future plans, the exchange of biomedical research information, and possible collaborative efforts in these fields among themselves and with WHO.

12.4 At its sixteenth session, in June, the WHO Advisory Committee on Medical Research gave particular attention to the problems of promoting research in developing countries and to other implications of resolution WHA27.61. The Committee also examined elements of general research policy and strategy, ways in which its members could participate more in WHO's research activities, and ethical principles to be followed in WHO research involving human subjects. It also reviewed the Organization's research programmes in human reproduction and family planning, tuberculosis, onchocerciasis, cardiovascular diseases, rheumatoid-arthritic disorders, statistics, and mental disorders.

12.5 At its thirteenth meeting, held in Washington, D.C., in June, the Advisory Committee on Medical Research of the Pan American Health Organization (PAHO) reviewed the Organization's research activities in the Region of the Americas and examined reports on a number of subjects, including the control of disease in Amerindians in cultural transition;¹ mycotic diseases in the Trans-Amazon Highway region; Chagas' disease; sporozoite-induced immunity in mammalian malaria (see paragraph 5.14); causes of dental caries in Colombian communities; and adequate protection for human subjects in medical research.

12.6 In planning and developing the Organization's programme of medical research, the Director-General is assisted by the Advisory Committee on Medical Research, whose work has been referred to in paragraph 12.4 above, and by scientific groups which help in reviewing particular fields of research. Five such groups were convened in Geneva during the year on the following subjects: health statistics methodology related to perinatal events; chemical and biochemical methodology for the assessment of the hazards of pesticides for man; guidelines for evaluation of drugs for use in man; progress in the methodology of the evaluation of the dependence-liability of drugs; and advances in methods of fertility regulation. Reference is made to these meetings in the relevant sections of this report.

¹ Neel, J. V. (1974) *Bull. Pan Amer. Hlth Org.*, 8, 205-211.

12.7 Among the methods employed by WHO for promoting research is the award of grants to research institutions and workers and the designation of selected institutions around the world to carry out in collaboration with the Organization specific functions related to the WHO research programme. Over the years almost 500 institutions with the necessary expertise and facilities have been designated as WHO "international (or regional) reference centres", "research and training centres", "collaborating institutions", "collaborating laboratories" and the like. This invaluable network has grown particularly rapidly in the past few years not only in number, but also in the range of activities in which it is engaged. At the same time individual institutions have widened, or in some cases contracted, the spectrum of their work. Consequently, the types of title of these institutions have proliferated but the designations no longer always accurately reflect the functions performed. Therefore in order to harmonize and rectify the titles steps are being taken, in agreement with the appropriate national authorities, to redesignate these institutions, using the uniform title "WHO Collaborating Centre" followed by a phrase indicating the main functions of each. However, it will necessarily take some time to complete this process, and, while many redesignations have already been made, a number of institutions still retain their original titles. To avoid confusion, the list in Annex 5 shows, by subject, all the institutions within which there are WHO-designated centres but without indicating their titles. Where these institutions have been named in the preceding chapters of this report, however, every effort has been made to use the designation in effect at the time of writing.

12.8 Under the WHO research training programme, 43 grants were awarded in 1974 to enable research

workers to work abroad and widen their research experience with a view to increasing their contribution to the research activities of their own countries on their return. In addition, 44 grants were awarded to promote the exchange of scientific knowledge by enabling investigators working on subjects of interest to WHO to visit scientists in other countries working in similar or related fields. These grants are tabulated in Annex 6.

12.9 Research and development efforts have been pursued to improve biomedical data acquisition systems in relation to the needs of field epidemiology and the development of early warning systems. Special aspects of diagnostic technology, for example in the identification of bacteria and parasites in large-scale surveys, have also been investigated in connexion with widespread endemic diseases such as tuberculosis and schistosomiasis. Scientific institutions collaborating with WHO have increased their technical involvement in the search for more efficient, quantitative, and practical methods of epidemiological measurement in the field and of data analysis. Significant progress has been made in devising faster and cheaper computer techniques for extracting relevant information from complex epidemiological records. Quantitative procedures for the earlier detection of epidemic trends in relation to surveillance programmes have been improved, and more accurate and sensitive methods for mapping, processing and displaying spatiotemporal information, for example in relation to insect vectors, have been developed. Much of this research and development work was carried out in collaboration with the Engineering in Medicine Laboratories at the Imperial College of Science and Technology, London, and Lausanne University and the Federal Polytechnic School, Lausanne, Switzerland.

13. HEALTH LITERATURE AND INFORMATION

Library and health literature services

13.1 After examining the report of the Executive Board on its organizational study on medical literature services to Members, the Twenty-fifth World Health Assembly in 1972 adopted a resolution (WHA25.26) in which it drew particular attention to, among other things, the importance of an improvement of medical library services for the effective use of published biomedical information, and particularly the development of regional medical libraries. During the year under review, steps were accordingly taken to initiate a global WHO health literature programme involving the establishment of a series of health literature "centres of excellence", located in developing countries in Africa, Asia and the Pacific, covering a broad geographical region and coordinated with appropriate resources in other geographical areas. Each centre of excellence will bring a variety of health literature and information services within easier reach of a number of neighbouring countries and facilitate access to a wide range of books, periodicals and audiovisual materials on health topics as well as organizing document-delivery systems, such as interlibrary loans and copying facilities, and ensuring appropriate training.

13.2 The better to share limited resources and utilize the facilities of individual institutions for the benefit of a greater number of users, the centres will act as foci of interacting and complementary networks of libraries and information and documentation centres. Rather than following a fixed pattern, account will be taken in each region of local conditions and needs in order to ensure a maximum flexibility in approach.

13.3 The programme includes the provision by the regional centres of advanced information resources including computerized retrieval services such as MEDLINE,¹ which was demonstrated in May to delegates to the Twenty-seventh World Health Assembly. New arrangements have been made with the United States National Library of Medicine for WHO to use the huge MEDLINE data base, containing more than half a million articles in the most important current biomedical journals of the world. Connected by communications lines directly to the computer in

the USA, the WHO MEDLINE centre in Geneva is now providing services for health workers in the developing countries in many parts of the world. In its first eight months of operation, almost twice as many literature searches were undertaken as during the two years in which the batch-processing MEDLARS system was utilized, and the operation is incomparably faster. The users' response to the new service has been very satisfactory.

13.4 The MEDLINE service was also started on a pilot basis at the PAHO/WHO Regional Library of Medicine and Health Sciences, São Paulo, Brazil. So far confined to that city, the system is being extended to a four-city experimental network with a view to building up a Pan American network for biomedical communications. To help to overcome the acute shortage of health literature in medical schools in the South-East Asia Region, six student loan libraries were set up, each holding a number of copies of about 40 textbooks in paperback editions. The Regional Documentation Centre on Human Reproduction, Family Planning and Population Dynamics in New Delhi provided bibliographical and referral services in that field.

Health information of the public

13.5 One of the constitutional functions of the Organization is to develop an informed public opinion on matters of health. The health information programme of WHO seeks to fulfil this function by acquainting the lay public and its opinion-makers with the facts on matters of general health and on specific topics of current interest or importance and by promoting an awareness of what the Organization is doing and why. These purposes are achieved through the mass communications media and in a variety of other ways, such as university lectures and information sessions and exhibitions in other educational institutions.

13.6 World Health Day, which marks on 7 April of each year the coming into force of WHO's Constitution, provides an annual opportunity to expound a major health theme. The theme for 1974 was "Better Food for a Healthier World", and was communicated

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 10.82.

in many parts of the world by special exhibitions, through newspapers and medical journals, and over radio and television. In Burma, film and radio entertainers voluntarily toured the country giving performances and singing specially composed songs to popularize the theme. Botswana, Ghana, Liberia, Nigeria, Senegal, Sierra Leone, and Zambia each devoted a week to the celebrations, cultural and youth societies arranging lectures or tours in rural areas to demonstrate better ways of growing foodstuffs as well as the importance of health education and personal hygiene. Madagascar organized public cooking demonstrations, using locally grown foods. In Uganda there was a televised panel discussion on nutritional problems for children and mothers, and the Ministry of Health organized a nationwide essay competition for all secondary schools. Some 16 500 sets of information material in English, Portuguese or Spanish were distributed in the Region of the Americas, and many requests for these sets were prompted by a "Letter to the Teachers" sent out to schools in the USA; New York's municipal broadcasting station, WNYC, made references to the theme throughout the day. A film entitled "Food for Health", specially produced for WHO by DEFA Trickfilm Studios of Dresden, German Democratic Republic, explains the basic facts about nutrition, what makes up a balanced diet, the dangers of overeating, and the importance of various food groups. It is available in English, French and German and was shown in cinemas and on television in many countries on 7 April. In Greece, where the official policy has been to celebrate World Health Day in different provincial towns each year, the occasion was marked in Yannina. The town of Turku in Finland arranged a children's drawing competition on the theme of nutrition which attracted 4000 entries. *La Gazette médicale de France* brought out a special issue on the subject. In Phnom-Penh, despite the emergency situation, streamers announcing the slogan were displayed in the streets. Elsewhere in the Western Pacific Region health officials in 11 countries and territories marked the occasion by exchanging greetings over a special satellite radio link-up, described by New Zealand officials as "an exciting means of communication which could be used in many ways to assist our South Pacific neighbours in times of epidemic or emergency".

13.7 Satellite communications were also used for a three-city press conference, linking Washington, New York and Geneva, on the problems of smallpox eradication. This elicited a number of articles in newspapers in the USA, and newspaper and radio coverage elsewhere in the world was very encouraging. This disease and progress towards its eradication

were naturally much in the news in 1974 and stimulated a large number of press inquiries, particularly in the South-East Asia Region. Many press, radio and television teams were briefed concerning the smallpox eradication campaign and film material on smallpox was included in a scientific programme prepared by a television network in the USA. WHO's work in eradication was filmed in India by British, German and Swedish television teams, and a film about the eradication activities in Uttar Pradesh was made in Hindi and English in collaboration with the television services of All India Radio. Film material was also shot by WHO in Bangladesh on smallpox eradication, and in Fiji and Western Samoa on filariasis, tuberculosis and community water supplies.

13.8 Among the other communicable diseases on which information was particularly sought by the mass communications media were influenza, cholera and meningitis. In the Region of the Americas, for instance, about half of the telephone inquiries received were on the subject of the cholera outbreak in Portugal and the meningitis outbreak in Brazil. Photographic prints on onchocerciasis in West Africa were much in demand in the African Region, as were prints on the health consequences of drought and on rural health care, maternal and child health care, and health manpower development. WHO's research project on the genetic control of mosquitos aroused some controversy in the Indian press but comment veered in favour of the Organization as the true facts were made known.

13.9 World Population Year and the World Population Conference had important health implications which aroused much interest. For World Population Year, a ten-minute animated cartoon without commentary, entitled "Family Plan", was commissioned from the Rank Organisation of London and financed by UNFPA. It emphasizes the responsibility incurred in procreation, the role of the individual in society, and the importance of harmony within the family. Also in collaboration with UNFPA, a series of photographic transparencies was prepared in both colour and black-and-white for use in television programmes relating to World Population Year. For the World Population Conference, in Bucharest in August, a replica of a typical rural health centre was constructed in the capital in cooperation with the Romanian Government and UNICEF. The purpose was to stress the importance of the use of auxiliary health workers in delivering primary health care, including family health care, at the periphery in developing countries. The exhibit, an actual building, provided an account of the training and duties of such workers, the manner in which they are supervised,

patient referral mechanisms, and the supplies and equipment provided by UNICEF that are used by the auxiliaries in their daily work. A graphic and photographic display illustrated family health and family planning, and an edition in Romanian of the January issue of *World Health* concerning health and family planning was distributed. Radio feature material was produced on family planning and family health in African, Asian and Eastern Mediterranean countries. In response to the demand for these features, about 700 copies of taped material were distributed. In New Delhi a three-day seminar on "Press and Population" was organized in cooperation with UNICEF. This was attended by 37 senior journalists from both the English and vernacular press of Afghanistan, Bangladesh, India, Indonesia, Nepal and Thailand. They discussed the role that the press could play in disseminating information on family planning programmes in their countries and commented on local films produced by family planning agencies.

13.10 Photographic and other exhibits were also mounted in May at the World Health Assembly and in October at the International Cancer Conference in Florence. WHO participated, too, in a joint agency

exhibit at the World Food Conference in Rome in November. At a Paris film festival following the World Congress of Environmental Medicine and Biology in June the WHO film "Little Man—Big City" was shown, and five WHO cartoon films were screened, though not as competitors, during the International Competition of Films for Children at Gijón, Spain, in June. A 55-minute programme on WHO's work that was shown on French television received favourable attention in the French press.

13.11 Among the numerous recordings and broadcasts prepared during the year there were two 30-minute programmes in English and in French on the sociomedical problems of aging and the elderly, with a discussion of possible solutions.

13.12 The series of 25 fact sheets on public health problems issued during 1973, WHO's 25th anniversary year, proved so successful that another series on similar lines was started in 1974. Each month these "In point of fact" leaflets offer items of information about a variety of health topics. The magazine *World Health* continued to be published in Arabic, English, French, German, Portuguese, Russian and Spanish and in 1974 also appeared for the first time in Italian and Farsi.

14. CONSTITUTIONAL, LEGAL, FINANCIAL AND ADMINISTRATIVE DEVELOPMENTS

Legal Matters

Constitutional and Legal

14.1 On 1 April and 4 December 1974 respectively, the Commonwealth of the Bahamas and Grenada, already Members of the United Nations, became Members of the World Health Organization by depositing formal instruments of acceptance of the WHO Constitution with the Secretary-General of the United Nations. The Republic of Guinea-Bissau was admitted as a Member of WHO by the Twenty-seventh World Health Assembly on 16 May 1974 and deposited an instrument of acceptance of the WHO Constitution with the Secretary-General on 29 July 1974, date on which its membership became effective. The Twenty-seventh World Health Assembly admitted Namibia to associate membership on 16 May 1974. At the end of 1974 WHO had 141 Members and three Associate Members.¹ A list of Members and Associate Members is given in Annex 1.

14.2 The German Democratic Republic deposited in 1974 an instrument of acceptance of the amendment to Article 7 of the Constitution which relates to the suspension of voting privileges and services to which a Member is entitled and which had been adopted by the Eighteenth World Health Assembly in 1965 (resolution WHA18.48); this brings the total number of acceptances to 50.

14.3 During the year 12 further Member States (Albania, China, Ecuador, Gabon, the Gambia, the German Democratic Republic, Haiti, Honduras, Lesotho, Malaysia, Nicaragua, and Sri Lanka) accepted the amendments to Articles 24 and 25 of the Constitution adopted in 1967 by the Twentieth World Health Assembly (resolution WHA20.36). By the end of 1974, altogether 83 instruments of acceptance of these amendments, which bear on the membership of the Executive Board, had been deposited with the Secretary-General of the United Nations.

14.4 The amendments to Articles 34 and 55 of the Constitution, adopted by the Twenty-sixth World Health Assembly in 1973 (resolution WHA26.37),

¹ The associate membership of one of these, Southern Rhodesia, is regarded as in suspense.

were accepted in the course of 1974 by 19 Members—Barbados, Belgium, Brazil, Canada, Denmark, Egypt, Finland, Guyana, Honduras, Malawi, Niger, Oman, Sri Lanka, Sweden, Switzerland, United Arab Emirates, United Kingdom of Great Britain and Northern Ireland, United Republic of Cameroon, and Viet-Nam. By the end of the year a total of 20 instruments of acceptance had thus been deposited. These amendments will, when accepted by two-thirds of the Members of WHO, permit the Health Assembly to determine a flexible budgetary period for the Organization.

14.5 Two Members—the German Democratic Republic and Spain—acceded (the former with reservations) to the Convention on the Privileges and Immunities of the Specialized Agencies together with its Annex VII, which relates specifically to the World Health Organization.

14.6 In May, the Twenty-seventh World Health Assembly requested the Director-General to invite the representatives of the national liberation movements recognized by the Organization of African Unity or by the League of Arab States to attend meetings of WHO in an observer capacity (resolution WHA27.37).

Health legislation

14.7 Twenty-five volumes of the *International Digest of Health Legislation* had been published by the end of 1974. This periodical, in English and French, enables health ministries and health administrations to locate information on the legislation concerning most technical subjects with which they have to deal. The interest in retrieval of information on health legislation is evidenced by the considerable number of requests relating to specific problems and emanating from public health specialists, academic workers, and health administrations. During the year under review, information has been provided on an extremely wide range of subjects, as, for example, transplantation, abortion, contraceptives, medical ethics, medical aspects of adoption, the provision of care by allied health personnel in cardiovascular emergencies, food additives, the iron fortification of foods, shellfish

hygiene, pharmaceutical advertising, the dispensing of spectacles, the control of veterinary pharmaceuticals, the notification of cancer and measures to combat occupational cancer, as well as numerous aspects of environmental protection.

14.8 Many countries and territories are faced with the problem of adapting their health legislation to contemporary requirements. During 1974 WHO provided assistance in this area to Brunei, Malawi, and Tonga; and in the Americas, the Organization collaborated with countries of the Andean Pact (Bolivia, Chile, Colombia, Ecuador, Peru, and Venezuela) to review the health aspects of existing legislation, particularly in relation to economic integration plans.

14.9 As in previous years, the Organization undertook the presentation of a series of lectures on health legislation at the International Course in Health Development, organized in Antwerp in April-May by Belgian and Netherlands institutions in collaboration. A bibliography relating to the teaching of health legislation was prepared, and papers on health legislation were presented at the European regional conference on the prevention of the intercountry spread of infectious diseases held at Izmir, Turkey, in June. A new comparative study of venereal disease control legislation (updating an earlier comparative survey on this subject published in 1956) was considered at the meeting on health education in the control of sexually transmitted diseases in November (see paragraph 4.69).

The Financial Position

Budget for 1974

14.10 The effective working budget approved by the Twenty-sixth World Health Assembly for 1974 amounted to US \$106 328 800, which was an increase of US \$9 645 900 over the revised effective working budget for 1973.

14.11 As a result of the decision by the General Assembly of the United Nations in December 1973 to consolidate five classes of post adjustment into the base salary scales for professional and higher categories of staff, as from 1 January 1974, it became necessary to present supplementary estimates for 1974 totalling US \$2 471 000. In resolution WHA27.4 the Twenty-seventh World Health Assembly, on the recommendation of the Executive Board, approved these supplementary estimates, to be financed from available casual income, resulting in a revised total effective working budget for 1974 of US \$108 799 800. Thus, no additional assessments on Members were necessary in order to finance the supplementary estimates for 1974.

14.12 The continuing international monetary instability and inflation gave rise to budgetary problems throughout the year. It was only through special measures of economy, including delays in recruitment to fill vacant posts, that it was found possible to meet the resulting additional budgetary requirements within the approved budget for 1974.

14.13 The approved budget level for 1974, including the supplementary estimates, was US \$122 335 890. The difference of US \$13 536 090 between the effective working budget and the approved budget level is

accounted for by a transfer to the Tax Equalization Fund of US \$10 707 140 and the Undistributed Reserve of US \$2 828 950.

14.14 The distribution of the approved 1974 effective working budget among the appropriation sections, taking account of the adjustments referred to above, is shown in Annex 11.

United Nations Development Programme

14.15 Under the UNDP system of country programming, projects are planned, approved and implemented within "indicative planning figures" (IPF) established for individual countries for a five-year period. In 1974 WHO received new financial authorizations for the execution of UNDP-financed health projects in a total amount of US \$29 827 725, bringing to a grand total of US \$84 942 676 the amount allocated by UNDP for such projects during the initial IPF period 1972-76.

United Nations Environment Programme

14.16 A total amount of US \$219 410 was allocated to the Organization in 1974 by the United Nations Environment Programme for the purpose of carrying out project activities in the field of environmental health.

United Nations Fund for Population Activities

14.17 During 1974 the Organization received a total of US \$11 506 583 from the United Nations Fund for Population Activities to carry out projects relating to

health aspects of human reproduction, family planning and population dynamics (see Chapter 2) in accordance with the policy established by the Health Assembly.

United Nations Fund for Drug Abuse Control

14.18 A total amount of US \$426 150 was allocated to the Organization in 1974 by the United Nations Fund for Drug Abuse Control to carry out projects of assistance in the field of drug dependence (see Chapter 7).

Voluntary Fund for Health Promotion

14.19 Contributions in cash and in kind received in 1974 for the Voluntary Fund for Health Promotion amounted to US \$15 823 955, bringing the total of contributions credited to the Fund since its inception to US \$78 106 271 as at 31 December 1974. These contributions related to the following sub-accounts:

	1.1.1974- 31.12.1974 US \$	Total from inception US \$
Special Account for Medical Research:		
Unspecified activities	2 724	2 013 681
Expanded programme on human reproduction	8 077 451	18 965 563
Specified activities—other	1 398 070	13 454 412
Special Account for Community Water Supply	742	1 037 044
Malaria Eradication Special Account	257 823	21 798 510
Special Account for Smallpox Eradi- cation	4 533 310	9 381 882
Special Account for the Leprosy Pro- gramme	191 027	952 673
Special Account for the Yaws Pro- gramme	3 303	74 389
Special Account for the Cholera Pro- gramme	6 883	2 030 441
Special Account for Assistance to Zaire ^a	—	342 680
Special Account for Assistance to the Least Developed among Developing Countries ^b	28 895	147 691
Special Account for the Expanded Programme on Immunization ^c	20 174	20 174
Special Account for Miscellaneous Designated Contributions	1 301 798	7 825 280
General Account for Undesignated Contributions	1 755	61 851

^a This special account was disestablished in 1974 by resolution EB54.R14.

^b This special account was established in 1974 by resolution WHA27.34.

^c This special account was established in 1974 by resolution WHA27.57.

Working Capital Fund

14.20 The obligations incurred in 1974 and the status of the collection of contributions and of advances to the Working Capital Fund at the end of 1974 are shown in the Financial Report,¹ which is published as a supplement to the Annual Report of the Director-General for submission with the Reports of the External Auditor to the Twenty-eighth World Health Assembly.

14.21 The Twenty-sixth World Health Assembly decided, in resolution WHA26.23, that Part I of the Working Capital Fund, composed of advances assessed on Members, should remain at the amount of US \$5 000 000, to which should be added the assessments of Members joining the Organization after 30 April 1965. Part I amounted to US \$5 114 000 at 31 December 1974. In the same resolution, the Assembly decided that Part II, made up of transfers of casual income, should remain established at US \$6 000 000. The amount of the Working Capital Fund thus totalled US \$11 114 000 at 31 December 1974.

Revolving Fund for Teaching and Laboratory Equipment for Medical Education and Training

14.22 The status of the Revolving Fund for Teaching and Laboratory Equipment for Medical Education and Training is shown in the Financial Report.¹ During 1974, 42 requests, amounting to US \$525 135, were accepted (see also paragraph 14.33).

Real Estate Fund

14.23 The status of the Real Estate Fund, which was established by the Twenty-third World Health Assembly, is shown in the Financial Report.¹ No additional amount of casual income was appropriated to the Real Estate Fund in 1974.

Administration

Structure and staff ²

14.24 The changes in organizational structure that took place at headquarters during 1974 were principally made with the aim of bringing that structure into closer conformity with the programme classifi-

cation structure. In order to correspond with programme titles, the Division of Prophylactic and Therapeutic Substances became the Division of Prophylactic,

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 222.

² Reference to staff training is made in paragraphs 3.87-3.88.

Diagnostic and Therapeutic Substances, the Office of Science and Technology became the Office of Research Promotion and Development, and the unit of Programme Coordination was renamed Co-ordination with Other Organizations. Library and Documentation Services was renamed Office of Library and Health Literature Services and was separated from the Division of Health Manpower Development. The Health Laboratory Services unit, renamed Health Laboratory Technology, was transferred from the Division of Strengthening of Health Services to the Division of Prophylactic, Diagnostic and Therapeutic Substances.

14.25 Based upon a series of consultations with personnel in headquarters, efforts were made during the year to bring about a greater participation of staff in the planning and implementation of the Organization's programme and to improve communications not only at headquarters but also between headquarters and the regions. These activities will be continued. As a further result of the staff consultations, an experimental issue of a staff newspaper was prepared and circulated, along with questionnaires on the desirability of such a publication, to all WHO staff in headquarters, regional offices and the field. The answers showed a very strong response in favour of a staff newspaper and the *WHO Journal* began monthly publication in July with a circulation of approximately 5000.

14.26 An office of Ombudsman was established on an experimental basis at headquarters to investigate the problems and grievances of staff members relating to their terms and conditions of employment and to offer suggestions for the improvement of administrative practices.

14.27 A study was made at the Regional Office for the Americas with a view to adapting the programme classification to the one used in the Ten-year Health Plan for the Americas, taking into account WHO's current classification plan.

14.28 Organizational changes were also made in the South-East Asia Region whereby the units of Education and Training and Medical Education were merged and renamed Health Manpower Development.

14.29 On 30 November 1974, the total staff (excluding staff of the Pan American Health Organization) was 3980 as compared with 3813 on 30 November 1973, an increase of approximately 4.4%. Details of the numbers and distribution of the staff and of its composition by nationality on 30 November 1974 are given in Annexes 12 and 13. The latter shows that on

that date the number of Members whose nationals were employed by the Organization in posts subject to geographical distribution was 108, or about 75.5% of the total membership of the Organization.

14.30 In the Region of the Americas, a working group composed of representatives of the Administration and the Staff Association was established for the purpose of reviewing the remaining differences between the Staff Rules of the Pan American Sanitary Bureau and those of WHO. A report on the matter was approved by the Executive Committee of the Pan American Health Organization in July.

Headquarters and regional office accommodation, and related matters

14.31 The Twenty-seventh World Health Assembly, in resolution WHA27.14, again decided to defer for another year any action on the development of plans for the extension of the headquarters building.

14.32 In the African Region, work on the extension of the Regional Office building was completed in February. In the Region of the Americas, the construction of the new Zone Office building in Brasilia, started in 1973, continued and is expected to be completed early in 1975; in the meantime the Ministry of Health provided temporary accommodation. A reallocation of office space was made in the Regional Office building in Washington, D.C., to relieve the crowding that had developed. In the Eastern Mediterranean Region, the construction of several housing units for WHO project staff in Southern Sudan, authorized by the Twenty-sixth World Health Assembly in resolution WHA26.48, was completed.

Supply services ¹

14.33 The value of supplies and equipment purchased through headquarters during 1974 approached a total of US \$16 000 000, not including approximately US \$1 920 000 required to cover freight and insurance charges. Line items ran to 47 000. Some 8800 purchase orders were placed in some 40 countries with over 2000 different suppliers for shipment to an approximately equal number of projects, institutions and receivers in 120 countries throughout the world. The above figures include purchases made on a reimbursable basis for 28 countries, and for the United Nations, UNICEF, UNHCR, IARC, the International Children's Centre, and governmental and non-

¹ Supplies for emergency and relief operations are discussed in paragraphs 15.39-15.44.

governmental organizations in official relations with WHO, amounting to US \$3 854 253. Of this total, US \$568 747 were for purchases made out of the Revolving Fund for Teaching and Laboratory Equipment for Medical Education and Training. Purchases from research grants awarded to individual investigators or institutions amounted to US \$785 564. The proportion of supplies and equipment provided from funds other than the regular budget ran to 64% of the total.

14.34 Supply operations during 1974 provided an all too realistic indicator of worldwide inflation and the snowballing effects of the energy crisis, the impact of which was reflected in higher prices for almost all commodities, slower deliveries, shortages, higher shipping costs and less frequent shipping services. All this contributed to the problems of purchasing, transportation and physical distribution, thus affecting WHO's ability to provide assistance and governments' capability to deliver health services. Two factors that may be of a long-lasting character are the growing unwillingness of suppliers to accept small orders and the inability or unwillingness to quote firm prices for future delivery.

14.35 Given this situation, in which the Organization is confronted with increasing problems in providing replacement parts, accessory items, and small quantities of esoteric chemicals or biological substances—frequently called for urgently—and in recognition of the fact that delivery may be more important than price, a greater delegation of authority has been accorded for local and direct purchase at regional and project levels. For reasons somewhat different but related to the streamlining of the supply operation, arrangement has been made with UNICEF whereby regional offices may submit direct orders to the Copenhagen warehouse for any standard items that appear in the catalogue of the UNICEF Packing and Assembly Centre there. In this connexion, assistance was provided to UNICEF in developing the list of essential medical and other relief supplies which are now carried in the emergency stockpile available to United Nations agencies, governments and recognized voluntary agencies.

Coordination in administrative, budgetary and financial matters within the United Nations system of organizations

14.36 The implementation of phase I of the cost-measurement system developed on an interagency basis continued throughout the year, yielding useful data for planning, evaluation and cost control pur-

poses. As previously agreed the cost figures produced by the system for the full year 1973 in the various organizations, including WHO, would also be used as a basis for determining the future level of reimbursement of executing agencies for programme support costs related to UNDP-financed projects. The 1973 data confirmed the preliminary findings that the full cost of administrative and operational support to UNDP-financed projects was considerably in excess of the 13% of project costs at present being reimbursed by UNDP and that it actually averaged some 23%. The final report on the relevant cost-measurement figures for 1973, as well as a series of options that might serve as a possible basis for the reimbursement of programme support costs by the UNDP and other funding organizations, are expected to be considered by the UNDP Governing Council at its nineteenth session in January 1975.

14.37 Following the decision by the United Nations General Assembly to establish new standards of air travel for United Nations officials according to which only those at the level of Assistant-Secretary General or above are entitled to first class travel, the ACC at its April session decided to adopt these standards for application throughout the United Nations system. Consequently, the Director-General decided that from 15 June 1974 these standards of accommodation would be applied to all official travel by air of WHO staff—except that for journeys of short duration, such as those within Europe or North America, staff members at the level of Assistant Director-General or above would also travel by economy class.

14.38 Information was provided to the working group, consisting of 13 representatives of Member States, established by the United Nations General Assembly to consider the effects of currency instability and inflation on the budgets of the organizations and to recommend alternative solutions to overcome these difficulties. During the month of July the International Civil Service Advisory Board (ICSAB) met at WHO headquarters to review the salaries and allowances of the staff in the professional and higher categories in the United Nations system. The Organization also provided data and background information to ICSAB in connexion with its review.

14.39 One of the studies carried out within the United Nations system in which WHO took an active part dealt with questions relating to the cost/effectiveness of the International Computing Centre. The findings of the study led to the conclusion that the rate of utilization of the Centre was satisfactory and comparable to that of the New York Computing Centre and that the respective unit costs were of the same order.

14.40 Two formal reports received from the Joint Inspection Unit were considered by the Executive Board at its fifty-third and fifty-fourth sessions in January and May respectively, together with the Director-General's comments. One report concerned the activities of the Joint Inspection Unit for the period July 1972 to June 1973; the other dealt with the need

for a revised concept of UNDP regional training programmes in the least developed countries in East Africa. The Director-General's comments and the decisions of the Board on these reports were transmitted to the Economic and Social Council, to the Chairman of the Joint Inspection Unit and to the External Auditor.

15. COOPERATION WITH OTHER ORGANIZATIONS

15.1 The year 1974 was one of increased activity in cooperation with other international organizations in nearly all programme areas, as will be seen from other chapters of this Annual Report. Three major events required concerted action by the United Nations system. The first of these relates to the Sixth Special Session of the United Nations General Assembly on raw materials and development (April-May 1974), which adopted a Declaration and a Programme of Action for the Establishment of a New International Economic Order (resolutions 3201 (S-VI) and 3202 (S-VI) respectively). Within the Programme of Action, all organizations and institutions of the United Nations system are expected to contribute to the establishment of the new international economic order as defined by the General Assembly. The Director-General has already taken various steps in conjunction with the Secretary-General of the United Nations and the executive heads of other specialized agencies and institutions in the Administrative Committee on Coordination at its sixty-third session in October 1974. The second major event was the World Population Conference, held in Bucharest in August. Preparations for this conference were intensified during the first half of the year and the role played by the Organization at the Conference is reflected in Chapter 2. The third event was the World Food Conference, held in Rome in November (see paragraph 2.36). In preparation for this Conference a series of preparatory committee meetings were held throughout the year in which the Organization participated and gave both technical and policy advice. A WHO delegation also attended the Conference itself. In addition, the Director-General has taken initial steps in collaboration with UNICEF and FAO to meet requests made in resolutions adopted by the Conference.

15.2 As in the past, the Economic and Social Council was the principal United Nations organ for the overall coordination of the activities of the specialized agencies. Among the matters discussed at the fifty-sixth and fifty-seventh sessions of the Council in 1974 were International Women's Year, various aspects of science and technology, assistance to drought-stricken areas, and the establishment of a new international

economic order. This last, it may be noted, was considered by the Council in relation to the 1974 mid-term review and appraisal of the International Development Strategy for the Second United Nations Development Decade. In all these subjects, the Organization made preparations for joint undertakings for the successful accomplishment of the requests made to the United Nations system. In particular, the Director-General has initiated a series of actions designed to contribute to the achievement of the goals of International Women's Year and has carried out an initial study of the role of science and technology in relation to WHO programmes. In both cases, this information has been brought to the attention of the other United Nations organizations concerned with a view to linking all their present and planned actions. Another broad area of concern relates to the establishment of an international habitat and human settlements foundation and the preparations for the forthcoming Conference-Exposition on Human Settlements (Habitat) to be held in Vancouver, Canada, in May-June 1976. The Organization has made known its interests and planned activities in this joint endeavour.

15.3 Four particular aspects of cooperation with the United Nations itself deserve mention. The first of these concerns the Organization's continued and close collaboration with the Office of the United Nations Disaster Relief Coordinator. This is more fully discussed in paragraphs 15.39 et seq. below, where the second, related activity is also considered—namely, cooperation concerning the drought in the Sudano-Sahelian zone of Africa. Thirdly, a most important area of cooperation was that with UNEP, for the development of common environmental programmes; the extent of this is abundantly shown throughout Chapter 10. Finally, the Secretary-General of the United Nations was requested to prepare a report on the coordination within the United Nations system of all activities of concern to UNFDAC; the Organization has contributed to this report and has remained in close contact with the UNFDAC secretariat for the purpose of enhancing the effectiveness of the multidisciplinary efforts being made to control drug abuse.

15.4 The Organization has, of course, also continued to implement its programmes through bilateral and multilateral consultations and joint undertakings with the other specialized agencies and IAEA, and to make its special expertise available to the sister agencies in the system. Some examples are given in the following paragraphs.

15.5 ILO and WHO have continued their cooperation in several fields where employment strategies and approaches to furthering the development process have health aspects or implications. Rural development and family planning studies related to such development and to overall population questions are a basic joint concern of the two organizations. WHO has also collaborated with ILO in its consideration of occupational safety and health in large-scale public works, and has continued to put technical information at the disposal of ILO concerning the vocational rehabilitation of the disabled. Environmental programmes, too, offer specific areas of mutual concern and study. In this connexion a new undertaking was initiated by ILO in 1974 requiring the close collaboration of WHO; this concerns the effects of noise and vibration in the working environment. WHO also contributed substantially to the Seventh World Congress on the Prevention of Occupational Accidents and Diseases, and to the International Symposium on Practical Applications of Ergonomics in Industry, Agriculture and Forestry (Bucharest, September).

15.6 FAO has continued to be a major partner of the Organization throughout the year. As noted in paragraph 15.40 below, WHO has been very actively engaged in the Sahelian relief operations for which FAO was designated as the focal point by the Secretary-General of the United Nations. In the same connexion, joint nutritional surveys by FAO and WHO—and in collaboration with UNICEF—were begun in the Sudano-Sahel area. The participation of FAO in the onchocerciasis control programme in Africa (see paragraph 5.37), particularly in connexion with the agricultural and economic aspects, should also be mentioned. As in the case of ILO, WHO relations with FAO also take place in part within the framework of rural development and population activities; the latter were reviewed by FAO and WHO during the year. Other areas of concern to WHO include nutrition policy and planning; animal production and health research; the protection of living resources and fisheries from pollution in the Mediterranean; and a joint venture by FAO and IAEA on the commercialization of irradiated food items accepted for human consumption. Pesticides and fertilizers are

also matters affecting both organizations; in particular, WHO during the year made known its views regarding the use of pesticides for public health purposes.

15.7 Working relations with UNESCO affect a very wide range of programme activities. The first of these relates to education and educational studies that reflect upon the health sector. In this respect, two main subjects received attention during the course of 1974; the comparative studies of higher degrees of education, and nutrition education in schools at secondary level. For the former, WHO has contributed to the preparation of a convention on the recognition of studies, diplomas and degrees in higher education in Latin America and the Caribbean. Part of the mutual education interests of UNESCO and WHO concern the involvement of youth in international programmes and projects as well as the general development of activities concerning educational planning. A second sphere of common interest is science and technology. In this connexion, WHO has participated in meetings related to the status of scientific research workers, on which UNESCO is preparing a set of recommendations at regional level regarding scientific policy and research. UNESCO's Man and the Biosphere Programme has given rise to a number of matters of interest to WHO, and WHO has followed closely the developments in environmental engineering, as well as the questions related to arid and semi-arid zones and tropical and subtropical ecosystems. In connexion with the International Hydrological Decade, WHO is collaborating with UNESCO on recommendations related to a world register of rivers discharging into the oceans. WHO has also cooperated with UNESCO and the Intergovernmental Oceanographic Commission regarding questions of marine pollution. Family planning and population activities have received the Organization's attention in relation to the communication aspects of, and the uses of the mass media for, educating and establishing contact with the family; WHO contributed to two meetings organized by UNESCO in 1974 on communication aspects of population programmes.

15.8 WHO's collaboration with WMO is principally concerned with activities related to the atmospheric aspects of environmental pollution. To further the joint activities in this field, WHO has participated in the meetings of the Regional Associations of WMO.

15.9 In view of the many specialized and technical questions of concern to WHO and IAEA, the

Organization maintains a liaison office at IAEA headquarters in Vienna. Some of the programme questions which have been studied and on which research has been initiated in 1974 concern insect control through sterilization, isotope tracer-aided studies of foreign chemical residues in foods, the preparation and control of radiopharmaceuticals and the Code of Practice of Radiation Sterilization of Medical Products. Also, WHO has undertaken to study, in collaboration with IAEA, the effects of ionizing radiation on aquatic organisms and ecosystems.

United Nations Development Programme

15.10 The UNDP Governing Council approved country programmes for 22 countries at its seventeenth session, held in New York in January-February 1974, and for a further five countries at its eighteenth session, held in Manila in June. By the end of 1974, country programmes had been approved for 107 of the 119 countries and territories to which the procedure applies, leaving a further 12 to be dealt with in 1975. Thus, all the countries and territories concerned will have undergone a country programming exercise during the first United Nations Development Cooperation Cycle (1972-76). The majority of these country programmes covered the period up to the end of 1976, but about one fourth of them cover periods overlapping into the next development cycle (1977-81).

15.11 Two countries, Algeria and Indonesia, have undertaken country programming for the second time during the current cycle and these two programmes, extending to 1977 and 1978 respectively, were approved at the seventeenth session of the Governing Council.

15.12 During the year, UNDP carried out a comprehensive assessment of the country programming process as instituted by the Consensus adopted by the General Assembly in 1970. The results of this assessment, which was done with the help of the specialized agencies, will serve to define the future orientation of country programming. WHO for its part has stressed the need for intersectoral programming as the key to successful country programming and described the methodology of country health programming which can be used by national health authorities in determining their health priorities and the intersectoral implications of these and in devising ways of

meeting the priorities through medium- and long-term planning. WHO also proposed that periodic updating reviews should be included in country programming as a continuous activity and that the programming process be substantially simplified.

15.13 A functional improvement in WHO during the year resulted from the decision that from January 1974 operational responsibility for UNDP-funded activities would be delegated to the regional offices in the same way as for projects financed from WHO's regular budget and other sources. This decision is in line with General Assembly resolution 2975 (XXVII) calling on agencies to strengthen their operational structure and delivery capacity.

15.14 The Governing Council in its recent sessions has favoured a greater share of UNDP resources being devoted to the intercountry sector in future years. In 1974 steps were taken by the relevant UNDP bureaux to advance the planning of the regional programmes for the Europe, Mediterranean and the Middle East region and the Asia and Pacific region for the period 1975-81. WHO has presented a number of proposals covering both ongoing and new projects in environmental health, health manpower development, health planning, health services administration, medical records advisory services, training for medical equipment repair and maintenance, training in tropical public health, and trypanosomiasis control.

15.15 The regional programme for the Americas comprises a number of long-term projects receiving UNDP assistance, among them the Pan American Centre for Health Planning (Santiago), the Pan American Zoonoses Centre (Buenos Aires), and the project for education and training of allied health personnel.

15.16 Important programmes are also financed by UNDP for WHO's work in the African Region. These include the onchocerciasis control programme in the Volta River basin area (see paragraph 5.37 et seq.), which was supported almost entirely by UNDP in its initial preparatory phase and is now largely funded by a consortium of donor countries; UNDP, however, is continuing its assistance by covering needs for applied research in epidemiology and chemotherapy as well as the overall training requirements; the project covers the years 1974-76 in the first instance with an input of US \$1.2 million. UNDP will also assist the seven participating governments in preparing for the economic development of the areas as they are

progressively freed from onchocerciasis. UNDP increased its support for WHO's work in connexion with applied research into the epidemiology and methodology of schistosomiasis control in man-made lakes; the bulk of this work (involving some US \$1.2 million) is being carried out on Lake Volta in Ghana (see paragraph 5.31).

15.17 The country projects, which form the bulk of the UNDP assistance channelled through WHO, continue to be divided into large-scale projects (defined as those whose costs exceed US \$100 000), and small-scale projects whose approval is delegated to the Resident Representative.

15.18 Taking WHO's field programme for 1974 as amounting to some US \$72 million as funded from regular budget sources,¹ projects financed under the UNDP programme, amounting to US \$14.3 million, represent an addition of almost 20% of that sum.

15.19 During the year the Administrator approved 33 large-scale projects for which WHO was designated as executing agency, bringing to 150 the total of large-scale projects so far entrusted to WHO for execution. Project documents were signed for 29 large-scale projects, including 25 of the 33 approved by the Administrator in the course of the year (see Table 3). Preparatory assistance was approved for Indonesia, Maldives, Spain and Yemen as well as for a project of health assistance to African liberation movements and a regional training programme for animal health and veterinary health assistants in the English-speaking Caribbean.

15.20 In the consultation that WHO held during the year with UNDP and other agencies represented on the Inter-Agency Consultative Board and the Programme Working Group, concern was expressed over the low level of delivery in the UNDP programme generally. Following discussions in the Governing Council and the Economic and Social Council, the latter body in June took decision 3 (LVI) on a comprehensive policy review of operational activities for development throughout the United Nations system. During the year, WHO undertook a thorough analysis, particularly at the country and regional levels, of the reasons underlying the falling off of delivery. Some ways of remedying this may depend on WHO itself, for example reinforcing WHO Representatives' offices and introducing country health programming; others require action by UNDP, such as the further delegation of authority to UNDP field officers and a speeding-up of project approval.

15.21 It may be hoped that an improvement in the complex UNDP procedures will follow the introduction during the year of the management plan in which the Resident Representative sets out the preparatory steps needed to translate the country programme into operational projects: the tasks to be carried out, such as the drafting of project documents and their signature, the setting-up of evaluation missions and the review of the country programme. Secondly, the Administrator has developed a procedure whereby projects can be "approved in principle" to permit the Resident Representatives to move ahead with preparatory assistance at the field level pending formal project approval. Another innovation is the arrangement for tripartite reviews of projects by the government, UNDP and the agency concerned; in WHO's experience, these tripartite reviews have been most useful and in some WHO Regions a similar procedure has been adopted for regular programme projects.

15.22 WHO continued to review requests submitted by governments for UNDP assistance and to advise on their health implications; it also participated in a number of projects being executed by other agencies. Assistance was provided in various fields, including sanitary engineering, mammalian toxicology, medical nutrition, nursing education, health education, and hospital dietetics. Similarly, some of the UNDP projects for which WHO is executing agency were assisted by FAO (food control, zoonoses control), ILO (occupational safety), and UNIDO (sanitary engineering). WHO has provided long-term assistance in communicable disease control and sanitary engineering in connexion with the Lower Mekong Basin scheme being executed by ESCAP under UNDP auspices. A Memorandum of Understanding has been signed between the African Development Bank and WHO laying the basis for association in environmental health projects, particularly those financed by UNDP.

15.23 WHO has followed with considerable interest the discussions of the Working Group on Technical Cooperation among Developing Countries which was established by the UNDP Governing Council. The Working Group has recommended the expanded use of national personnel and of national institutions for training purposes in connexion with the overall technical assistance programme and suggested the establishment and maintenance of a roster of such services to which the executing agencies should have recourse whenever possible.

15.24 WHO projects financed from UNDP sources are shown in Part III of this Annual Report.

¹ *Off. Rec. Wld Hlth Org.*, 1973, No. 212, p. 348.

Table 3. Large-scale UNDP-assisted projects for which WHO is executing agency and on which procedural action was taken during 1974

Albania	Organization of a rehabilitation centre for the physically handicapped (A & S)	Mongolia	Assistance to the State Medical Institute, Ulan Bator (A & S)
Barbados	Animal and human health—community health (A & S)	Morocco	Development of environmental health services, Rabat (A & S)
Bhutan	Development of health services (A & S)	Morocco	Water supply (Phase III) (A & S)
Brazil	Strengthening of the Brazilian biomedical information network, São Paulo (A & S)	Nepal	Malaria control (A & S)
Brazil	Environmental control programmes in the State of Guanabara (A & S)	Nicaragua	Organization of hospital services during the reconstruction phase (A)
Chile	Expansion and improvement of the Bacteriological Institute, Santiago (S)	Republic of Viet-Nam	Malaria control programme (A & S)
Dominican Republic	Public health services (supplementary assistance) (A)	Syrian Arab Republic	Faculty of Pharmacy, University of Damascus (S)
Ecuador	Strengthening of the health sector (S)	Syrian Arab Republic	Faculty of Dental Medicine, University of Damascus (A & S)
Ecuador	Development of the veterinary laboratories of the National Institute of Hygiene (Phase II) (A & S)	Togo	Development of basic health services in the Kara Region (A & S)
Egypt	Extending and modernizing the central blood bank services (A & S)	Trinidad and Tobago	Strengthening of training unit of water supplies and sewerage authority (A & S)
Egypt	Virus research training and production centre (S)	Trinidad and Tobago	Establishment of a school of dental nursing (A & S)
Ghana	Rural water supply and environmental health (A & S)	Trinidad and Tobago	Animal health assistants curriculum development (A & S)
Indonesia	Strengthening of health services, province of Irian Jaya (A)	Uruguay	Medical services and hospital administration (supplementary assistance) (A)
Jamaica	Animal health programme (A & S)	Yemen	Hospital administration and nursing services (A & S)
Khmer Republic	Malaria control (supplementary assistance) (A)	Caribbean Regional	Water utility development and training (A)
Laos	Malaria control programme (A & S)	Regional	Environmental health advisory services, Western Pacific (A)
Lebanon	National wastes management plan (A & S)	Regional	Regional teacher training centre for health personnel, Manila, Western Pacific (A & S)
Maldives	Training of auxiliary health personnel (supplementary assistance) (A)	Regional	Medical teacher training and continuing education (Phase II), South-East Asia (A & S)
Mexico	Improvement of the environment (A & S)		

A: New projects approved during 1974 by the Administrator of UNDP.

S: Project documents signed in 1974.

A & S: Projects approved and project documents signed in 1974.

United Nations Children's Fund

15.25 The Executive Board of UNICEF held its twenty-eighth session in New York in May 1974 and approved commitments for a total of nearly US \$128.7 million. Some US \$112.5 million were allocated for aid programmes and 45.5% of this amount went for health services and 20.2% for nutrition. Discussions at the meeting centred on the emergencies that had occurred in various parts of the world and on the effect of worldwide price increases of oil, food and manufactured goods on the populations of less affluent countries and on the ability of their governments to implement programmes for children. The

Executive Board considered these problems to be important and urgent enough to warrant the issue of an official "Declaration of Emergency for Children" drawing international attention to the situation and calling for a substantial expansion of UNICEF aid.

15.26 During the year, WHO and UNICEF made a thorough review of the existing arrangements and modalities for cooperation and for the sharing of operational responsibilities. One consequence was that a revised set of operational policies was issued jointly by the Executive Director of the Fund and the Director-General of WHO.

15.27 To collect material for the UNICEF/WHO study of alternative approaches to meeting basic health needs of populations in developing countries, UNICEF/WHO teams visited selected countries to make a critical field survey of successful or promising approaches that are being tried out. In 1975 the joint study will be submitted to the UNICEF/WHO Joint Committee on Health Policy and to the UNICEF Executive Board.

15.28 During the year, lists of standard UNICEF equipment and drugs for family planning were established by WHO in consultation with experts from various institutions. A major review of the equipment provided by UNICEF for use in peripheral health facilities was conducted from the standpoint of its cost, usefulness and deficiencies, and the need to adapt it to integrated health activities. The review brought to light a number of constraints and resulted in proposals for a classification of health establishments, the grouping of staff into categories according to function, and the amendment of reference lists for health equipment and supplies. This report on reactions in the field to the design, supply, and use of equipment is a step towards the standardization of some parts of health technology.

15.29 Among the field activities in which cooperation between WHO and UNICEF has been especially active during the period under review, particular mention may be made of assistance for rural water supplies (see Chapter 10) and for the control of leprosy (Chapter 4); in connexion with this disease, consideration was given to the joint sponsorship of research in order to speed up the practical application of scientific advances.

15.30 WHO and UNICEF cooperated in relief operations in connexion with the continuing emergencies in the Sahel and Ethiopia and elsewhere (see also paragraph 15.39 et seq.). UNICEF made supplies and logistic support available to the disaster areas, and WHO provided vaccines and certain essential medicaments, and assisted in organizing health delivery points and making plans for the progressive reconstruction and expansion of health services.

United Nations Relief and Works Agency for Palestine Refugees in the Near East

15.31 WHO continued its technical direction and support of the UNRWA health programme by providing the services of the Agency's Director of Health and five other health specialists. On request,

assistance was provided in the fields of health laboratory techniques and training, mental health, and nutrition. A brief nutrition-assessment study was undertaken among the most vulnerable refugee groups. A number of WHO publications and some vaccines were also made available. Total WHO assistance to UNRWA during 1974 amounted to US \$193 000.

15.32 UNRWA's comprehensive community health programme for some 1.38 million refugees comprised integrated preventive and curative medical services, nutritional support for vulnerable groups, and environmental sanitation for those living in 63 refugee camps. Despite continuing serious budgetary difficulties, the level of health services was maintained, and in fact some modest improvements were achieved through the establishment of additional specialized clinics, clinical laboratories and dental units. Emphasis was laid on refugee self-help schemes, assisted by UNRWA, for environmental sanitation improvement and particularly for the construction of domestic latrines. Through appropriate preventive measures including surveillance, health education, improved environmental sanitation, and an extensive programme of regular immunization and special campaigns, the communicable diseases were kept generally under control. No case of cholera, smallpox, louse-borne or endemic typhus, relapsing fever, plague or yellow fever was reported during the year and most notifiable diseases continued to show a satisfactory trend.

15.33 A Special Committee composed of three health experts, nominated respectively by Indonesia, Romania and Senegal, was established by the Executive Board in pursuance of World Health Assembly resolution WHA26.56 to study the health conditions of the inhabitants of the occupied territories. The Twenty-seventh World Health Assembly, after considering the Director-General's report on health assistance to refugees and displaced persons in the Middle East, including an abbreviated annual report of the Director of Health of UNRWA and the report of the Special Committee, adopted resolution WHA27.42 in which, *inter alia*, it requested the Special Committee to complete as early as possible the fulfilment of its mandate and to submit to the Twenty-eighth World Health Assembly a comprehensive report, covering all health aspects, based on a field investigation; and urged the Government of Israel to cooperate fully with the Special Committee and particularly to facilitate its free movement in the occupied territories. The Special Committee visited the Arab States concerned in April-May and again

in August. A reply from the Government of Israel to the approach made by the Chairman of the Special Committee pursuant to resolution WHA27.42 was received late in 1974 and is under consideration by the Special Committee.

World Food Programme

15.34 In 1974 the World Food Programme (WFP) still had to operate under much the same circumstances of inflation and commodity crisis as in the latter part of 1973; in addition, it had to face considerable increases in both food and freight prices. At the WFP Pledging Conference in New York in February, 49 countries announced contributions of some US \$312 million for the 1975-76 biennium of the Programme; other announcements since then include one of US \$50 million in cash from Saudi Arabia. Nevertheless WFP will face its 1975-76 biennium with a tighter resource position than previously, with the result that stiffer priorities will have to be set among the demands made on the Programme. Table 4 shows the WFP commitments up to mid-year 1974.

15.35 The slightly higher proportion of funds invested in directly health-promoting projects, which rose from 8% to 9% of WFP's total funds for development projects, reflects the high priority now allotted to complementary feeding of mothers and preschool children (from 6% to 7% of WFP's development investments), while the proportion that went to hospital feeding and the support of public health activities remained unchanged. At the same time agricultural development and land improvement projects got 16% instead of 14% of the approved investment—on a par with elementary school feeding.

15.36 WFP noted with interest the World Health Assembly's resolution WHA27.29 on the role of WHO in bilateral or multilateral health aid programmes, since WFP is one among the several extrabudgetary resources of WHO on which governments may draw for health-promoting activities, especially when these form an integral part of their national health planning.

15.37 WFP's decisions on how to invest comparatively scarce resources in specific projects are based increasingly on the findings of the Programme's evaluation missions. During the year, WHO joined in such missions for eleven projects. These evaluations have indeed demonstrated several real project achievements—for example, the project for feeding vulnerable groups in Colombia and the self-help community

water supply project in the Dominican Republic. The terminal report of the WFP project in support of the national malaria services in Turkey showed that the objectives of improving the workers' efficiency had been attained.

15.38 From mid-1973 to mid-1974 WFP requested WHO's technical scrutiny of the health aspects of 22 new projects and seven project expansions. During the same period 30 projects were handled by the Programme following the quasi-emergency procedure which allows the Executive Director to proceed with projects without prior consultation with the co-operating technical agencies; in such cases the relevant health comments are submitted to WFP in the shortest possible time.

Table 4. WFP commitments to health and related activities, and to all projects, since the Programme's inception

General nature of project	Projects approved as at 30 June 1973		Projects approved as at 30 June 1974	
	No.	Amount (US \$ million)	No.	Amount (US \$ million)
Health and related activities				
Health promotion . . .	46	103.6	52	134.6
Institutional feeding . . .	59	264.2	61	282.2
Teaching institutions . .	69	96.3	71	107.5
Community housing and development	82	154.1	84	154.1
Total, all projects				
Development projects . .	588	1315.2	613	1479.7
Emergency aid	169	129.6	180	139.7

Natural disasters and emergency situations

15.39 In accordance with resolution WHA27.48 adopted by the World Health Assembly in May, WHO assistance to countries stricken by natural disasters or confronted with other emergency situations is being stepped up. Appropriate arrangements, including the appointment of a senior official responsible for emergency relief operations, have been made to enable the Organization to respond more quickly and effectively in meeting the emergency needs of countries. Hitherto, the Organization's activities in this connexion had been confined to the following: coordination of relief action in the health field; cooperation

with other organizations or agencies in assessing both the immediate and the long-term needs arising out of the emergency; provision of advice and assistance in meeting the emergency and in combating its longer-term health consequences; and procurement and shipment of medical and health supplies both for WHO's use in emergencies and on behalf of other organizations or authorities, or on a reimbursable basis.

15.40 During the year, WHO cooperated with the United Nations Special Sahelian Office (SSO) in New York and its Sahelian Office (UNSO) in Ouagadougou, with UNICEF, with the FAO Office for Sahelian Relief Operations (OSRO) which served as the focal point for the United Nations system's assistance in the Sudano-Sahelian zone of Africa, with the Permanent Interstate Committee on Drought Control in the Sahel, and with the League of Red Cross Societies to combat the effects of the long-standing drought in the seven countries of that zone: Chad, the Gambia, Mali, Mauritania, Niger, Senegal, and Upper Volta. In Niger, WHO worked with OSRO, UNICEF, and the League of Red Cross Societies in meeting the urgent health needs of displaced persons in ten temporary camps in the drought-affected zone. FAO provided WHO with a sum of US \$1 million for the purchase and shipment of large quantities of vaccines, intravenous feeding fluids, mineral electrolytes for oral rehydration, drugs and other medical supplies to combat outbreaks of disease. In addition, WHO carried out an in-depth study with regard to future assistance in rehabilitation and reconstruction, and formulated a set of proposals for a programme to control the repercussions of the drought on public health.

15.41 The Organization cooperated with the Office of the United Nations Disaster Relief Coordinator (UNDRO) in Geneva for the relief of drought victims in seven provinces of Ethiopia and in Sudan. UNDRO provided US \$15 000 for equipment urgently needed in support of health relief work. Health personnel for Ethiopia were recruited with funds provided by UNDP. In collaboration with UNICEF, WHO gave assistance in Wollo Province, Ethiopia, in storing and distributing medicaments, undertaking nutrition surveys, and studying water supplies for relief camps.

15.42 Emergency situations resulting from floods or other natural disasters occurred during the year in Bangladesh, Bolivia, Burma, Chile, Colombia, Honduras, Paraguay, Southern Sudan and the Syrian Arab Republic. In connexion with most of these,

WHO collaborated with UNDRO, UNICEF and the League of Red Cross Societies in procuring and shipping vaccines against typhoid, paratyphoid, cholera, tetanus etc., antibiotics, medicines to treat diarrhoeal diseases, insecticides, water purification products and other medical supplies. When a hurricane ravaged Honduras, the Organization worked with the Government in assessing the need for medical supplies, which were subsequently procured with funds provided by donors such as UNICEF (US \$150 000), UNDRO (US \$8000), the Federal Republic of Germany (US \$17 000) and the Canadian International Development Agency (US \$65 000). In Burma, where heavy rains combined with high tides caused much damage and a situation dangerous to health, WHO provided vaccines, antibiotics and other drugs, and medical equipment, with funds from UNICEF (US \$200 000), UNDRO (US \$5000) and its own regular budget (US \$9000).

15.43 In the special emergency situation in Cyprus, WHO, acting on a request from the Government, cooperated with UNICEF, UNHCR (which acts as the coordinator for United Nations humanitarian assistance to Cyprus), and the International Committee of the Red Cross in providing medical supplies and advisory services. A WHO team composed of an epidemiologist, a malariologist, two sanitary engineers and two microbiologists gave immediate advice to the local authorities. UNHCR provided US \$200 000 and WHO allocated US \$68 750 from its regional budget for the procurement of medicaments and personnel.

15.44 In accordance with the International Air Transport Association's resolution 200, UNDRO continued to arrange for the free air transport of emergency medical supplies requested from WHO. Emergency shipments of cholera and smallpox vaccines and related supplies were made in this way to several countries during 1974.

Nongovernmental organizations

15.45 The Executive Board at its fifty-third session, in January 1974, decided to establish official relations with the following nongovernmental organizations: the International Electrotechnical Commission, the International Union of Biological Sciences, and the World Federation for Medical Education; this brings the number of nongovernmental organizations in official relations with WHO to 109 (see Annex 10).

15.46 The extent of cooperation with nongovernmental organizations in official relations with WHO is partially reflected in the preceding chapters of this volume. Other examples of effective collaboration include:

- cooperation with the League of Red Cross Societies and its Nursing Advisory Committee in connexion with natural disasters and other emergency situations;
 - cooperation with the Council for International Organizations of Medical Sciences, including participation at a round-table conference on medical care which took place in Rio de Janeiro, Brazil;
 - cooperation with the International Organization for Standardization and some of its technical committees;
 - cooperation with the International Council of Scientific Unions and its Scientific Committee on Problems of the Environment (SCOPE), Committee on Space Research (COSPAR), and Scientific Committee on Water Research (COWAR);
 - cooperation with the International Union against Cancer and its Committee on International Collaborative Activities;
 - cooperation with the International Commission on Radiological Protection (ICRP) and International Commission on Radiation Units and Measurements (ICRU).
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PART II

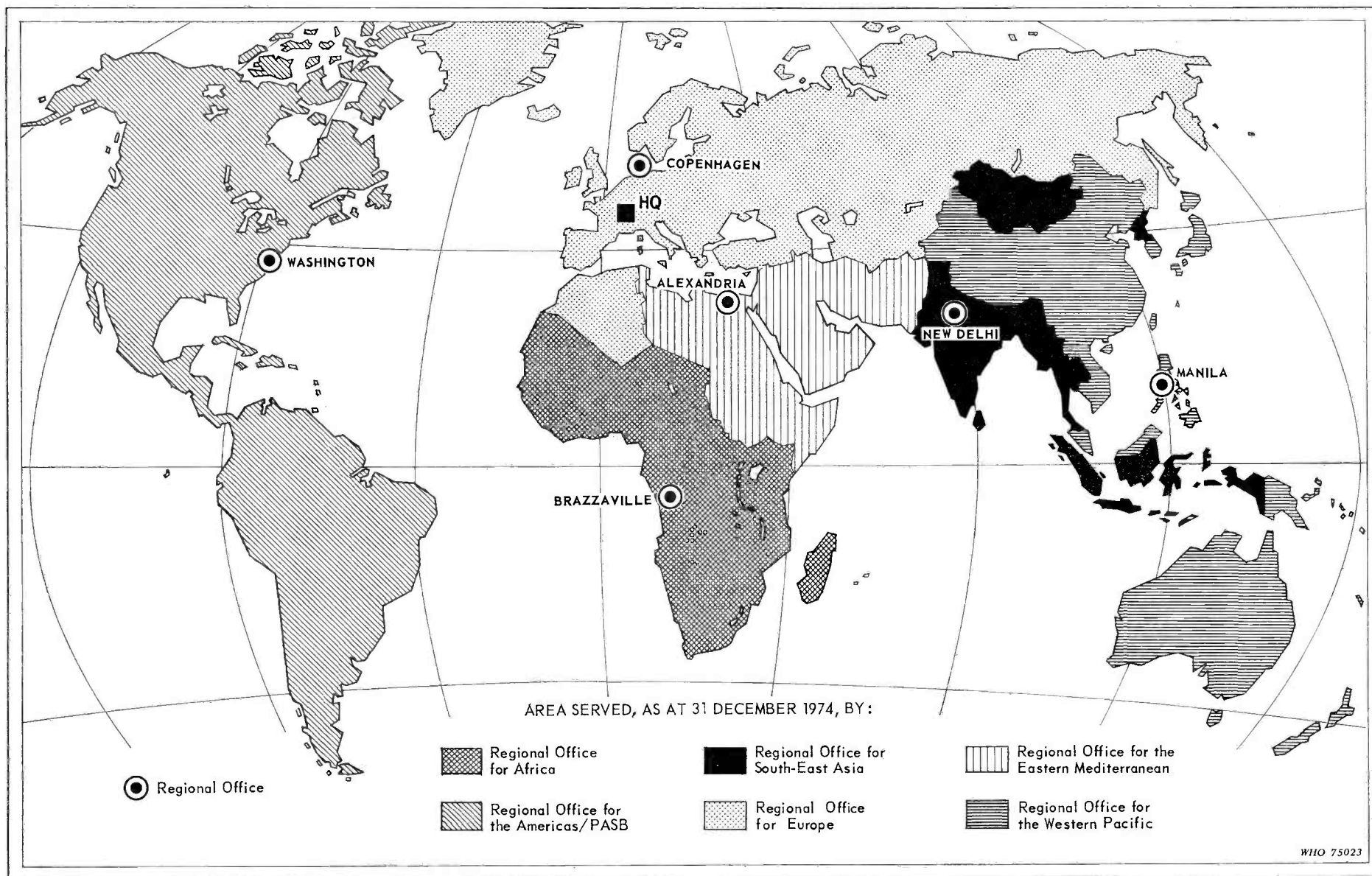
THE REGIONS

In order to present an integrated overall account of the Organization's work during the year, WHO's various programme activities have been reported together in Part I of this volume, whether they were carried out directly from headquarters or—as applies to by far the greatest part of the work—through the six Regional Offices.

Part II is concerned with some of the important developments, trends and problems within each Region. Brief accounts are also given of the meetings of the Regional Committees since these (unlike the World Health Assembly and the sessions of the Executive Board) are not covered in other volumes of the *Official Records of the World Health Organization*.

Fuller descriptions of the work within each Region separately are contained in the Annual Reports of the Regional Directors to the Regional Committees.

Fig. 1. WHO Regional Offices and the areas they serve



16. AFRICAN REGION

16.1 The progress of health work in Africa in 1974 took place in a highly unfavourable economic context caused by inflation and recession in the industrial countries, which had repercussions in the developing countries of the Region, and by higher fuel prices. Additional stresses were imposed by the prolonged drought in the countries bordering on the Sahara. These factors combined to exacerbate the customary severe problems of a Region that contains 13 of the world's 25 least developed countries—that is to say, countries in which the *per capita* gross domestic product is less than US \$100, the contribution of industry to the gross domestic product is less than 10%, and the literacy rate is less than 20%.

16.2 In spite of this adverse situation, WHO continued its work of organizing, at country level, an integrated and balanced programme for the strengthening of health services, manpower development, disease prevention and control, and promotion of environmental health in a society based on public participation and cooperation. The aim of its programme is to provide an essential minimum of well-being for everyone.

Communicable diseases

16.3 Communicable diseases remain a major problem in the Region. Despite the considerable efforts made by the Organization in helping to conduct mass campaigns against various diseases, in developing the health infrastructure, and in giving support to the epidemiological centres in Abidjan, Brazzaville, and Nairobi, most countries continue to need intensified assistance. The integration of control measures covering all communicable diseases and the inclusion of these measures in general health services are objectives pursued by almost all countries in the Region. The degree of success, while very encouraging in some countries and territories (Comoro Archipelago, Senegal, Togo, and the United Republic of Cameroon), remains slight in others. One of the major difficulties is that health personnel are often inadequate in numbers and quality to meet the additional responsibilities required of them.

16.4 Malaria control was continued during the year under projects for the development of health services. Several countries have prepared long-term plans for the development of health programmes and others are embarking on an “overall planning” exercise, of which malaria programmes will form part. Assistance is offered to governments in the preparation of realistic control programmes that reflect both government priorities and WHO policies. With the cooperation of WHO, national health personnel are being prepared to perform multipurpose antimalaria activities, including case-finding, chemoprophylaxis, and treatment. Such tasks have now become routine for many health personnel at the peripheral level. In several countries primary school children are being protected by the weekly administration of antimalarial drugs. Vector control activities in urban areas generally take the form of larviciding, and insecticidal barrier spraying is recommended in the zone surrounding these areas. The results have been disappointing, however, because the control activities have almost always been carried out by local councils with inadequate means at their disposal. Efforts are being made to awaken the awareness of the general public to the ways in which they can help malaria control activities. The same purpose is served by the creation of village health committees comprising the most influential local leaders.

16.5 Onchocerciasis furnishes a good illustration of the interrelationship between health and economics. The project for the control of this disease in the Volta River basin area, where continuing drought has exacerbated an already precarious situation, aims at opening entire areas for repopulation and economic development. In view of the success of the 1973 field trial of ABATE, applied by helicopter in the Comoé-Léraba basin for control of *Simulium damnosum* larvae, operational spraying began in December 1974 in the Volta River basin control programme areas. Epidemiological studies of onchocerciasis prevalence and severity have been undertaken in Ghana, Mali, Togo, and Upper Volta, as well as operational research on treatment and on vector control. This is a highly complex and long-term programme that involves not only seven governments and WHO, but also FAO, IBRD and UNDP; if successful, it will afford a good

demonstration of what can be achieved through a concerted effort by the international community to alleviate a grievous affliction.

16.6 Schistosomiasis is an increasingly serious health and economic problem in many countries where man-made lakes and irrigation schemes have increased the risk of transmission. WHO consultant missions have made recommendations for controlling the disease and protecting the populations that settle in areas recently opened up to economic development. Research on epidemiology and control methods continues in Ghana.

16.7 Foci of trypanosomiasis persist in several countries of the Region. In Zambia, endemic foci were determined through an epidemiological survey and recommendations made concerning detection methods and the operational and legal aspects of control, due account being taken of the implications for agriculture, tourism, and demography. Assistance was given to schistosomiasis and trypanosomiasis activities in Congo, Gabon, and the United Republic of Tanzania, mainly in epidemiological assessment, the development of diagnostic activities, and the formulation of control measures.

16.8 Tuberculosis activities have reached a new phase. Immunization programmes were carried out successfully in almost all countries of the Region and BCG vaccinations were performed on 40-50% of children aged 0-15 years. Case-finding and the treatment of infectious tuberculosis were incorporated into either epidemiological or general health services. Standard techniques in diagnosis and treatment are gradually being introduced in most national control programmes.

16.9 The evaluation of leprosy control programmes that has been carried out in several countries permits the better use of international assistance and indicates the importance of integrating field activities with general health services.

16.10 The smallpox eradication campaign entered the maintenance phase throughout the Region, with coverages of over 80% of all population groups.

16.11 Assistance was given for the control of yellow fever, measles, poliomyelitis, and plague, and arrangements were made for an expanded programme of immunization against a number of communicable diseases, utilizing new approaches. Preliminary cost/effectiveness studies were initiated.

Strengthening of health services

16.12 The strengthening of health services is hindered in many countries by lack of national guidelines and strategies, an incapacity to mobilize local resources, non-participation by communities, and difficulties of staff in adapting to local conditions. Member States must thus face the need for innovation. Some interesting experiments are, indeed, already under way. Systems analysis has been used in formulating a project for the development of rural health services in Nigeria, and, after a workshop on country health programming held in Brazzaville in March, the Government of Congo showed interest in taking part in the experiment. This consists essentially of systematic identification of a country's priority health problems, the determination of operational objectives, and the translation of these objectives into programmes—namely, coordinated groups of activities, techniques, and resources. In this way national strategies may be established and the respective contributions from the country itself and from external sources determined. Country health programming is primarily a national responsibility, but it can of course be aided by WHO. It provides an instrument that will facilitate the formulation, scientific management, and effective implementation and evaluation of health service development projects. It cannot be put into practice unless it is backed by an adequate integrated system of management information, and for that reason WHO is strengthening its efforts to develop statistical services.

16.13 The Organization provided statistical support to 16 African countries in the fields of epidemiology and the strengthening of health services and has compiled statistics giving an overall picture of the health manpower situation in the Region and the changes taking place in it. Technical guidelines on the collection, analysis, and presentation of health data for use by national and WHO field staff were distributed during the year, and efforts were made to devise techniques for the utilization of health statistics that are not of great accuracy or completeness.

16.14 The strengthening of health services demands a special effort to make the most of local resources, particularly manpower, since there can be no development without using all human resources to full advantage. It is much to be regretted that existing health delivery systems generally exclude the communities concerned. Plans are therefore being made to encourage community participation and to encourage people to cooperate in finding solutions and managing services. The village health committees in

the Ekali pilot area in the United Republic of Cameroon are excellent examples of community organization, enabling people to get together for concerted health action. With the help of technicians they have built simple, practical, and economical health facilities adapted to the people's customs and resources.

16.15 Whether such community involvement is successful depends on health education, which has a key role to play in encouraging participation. Good results were achieved in community health education and information in the course of the year. The Organization assisted the University of Ibadan, Nigeria, and the University Centre for Health Sciences, Yaoundé, in preparing course outlines and curricula for training health education specialists at undergraduate and postgraduate levels. Assistance was provided to Chad, Liberia, Mauritius, and Sierra Leone for the strengthening of their health education services. The Government of Chad was also assisted in the development of the health education curricula in training centres for primary school teachers.

Health manpower development

16.16 One of the surest means of helping Member countries to serve the whole population effectively is the training of health manpower. Increasing attention is being devoted to the quality of health manpower and the type of training given, with emphasis on the fundamental concept of the health team and on the need for training of a cooperative, noncompetitive nature.

16.17 A great obstacle to health progress in Africa lies in the African health staff themselves, who, because of the unsuitability of training received abroad, often tend to ignore local realities. Most African students trained at foreign universities do not have the advantage of participating in the cultural, social, political, and professional life of their own countries, and some of them become strangers to their own culture. For that reason it is encouraging to see that more and more students are being trained at institutions in the Region. Systematic training has started in the regional centres in Kampala (English-speaking students) and Yaoundé (French-speaking students), and fellowships have been granted to prospective teachers as a priority. Many countries in the Region have with WHO assistance undertaken studies for the creation of new training institutions, some of them interdisciplinary in character.

16.18 The training of nursing personnel and sanitary engineers has been strengthened in both regional and

national establishments. Particular attention has been paid to the training of different members of the health team in the same establishment.

16.19 The dissemination of information is being improved throughout the Region, and the creation of a regional library is being studied.

Family health

16.20 Among the governments of the Region there is growing interest in family planning activities, partly because of a progressive change in the climate of opinion and partly because the approach advocated by WHO generally meets with the approval of responsible opinion in the countries of the Region. Several of them—the Central African Republic, Congo, Dahomey, Lesotho, Madagascar, Mali, and Togo—have requested assistance from UNFPA. Madagascar has granted fellowships to students to attend the course on family health at the National School of Public Health at Rennes, France. Family health activities are also being developed on an appreciable scale in Botswana, Kenya, Liberia, Nigeria, and Swaziland. With the assistance of WHO, significant results have been obtained in Mauritius in the reduction both of infant mortality and of the rate of increase of the population.

Noncommunicable diseases

16.21 The main development in this area during the year was the increased emphasis on mental health and biomedical research. WHO has established contacts with the health authorities in various countries of the Region to collect information on mental health manpower and facilities and to stimulate further development in this field. The need to integrate mental health activities into the health services at all levels is recognized.

16.22 Although WHO-assisted research has been going on for some time in the Region, especially in cardiovascular diseases, cancer, and immunology, it is felt that future activities in biomedical research should be more coordinated. A consultation group has been set up to assist WHO in making decisions in this field.

Nutrition

16.23 The principal event during the year in the nutrition programme was the meeting in Brazzaville in September of the first full session of the FAO/WHO/OAU Regional Food and Nutrition Commission

for Africa. The FAO Scientific Secretary was designated as Coordinator of the Commission's Secretariat until the second session, which it is planned to hold in conjunction with the OAU Educational, Scientific, Cultural and Health Commission in December 1975.

16.24 Special assistance was given to the drought-stricken countries to promote improved nutrition and sanitation, to vaccinate the affected population against communicable diseases, and to ensure the early diagnosis and treatment of illness. The Organization also made nutritional advisory services available in Ouagadougou, with particular orientation towards the needs of the Sahelian zone.

Health laboratory services

16.25 In view of the importance of communicable diseases in the Region, efforts are being made to decentralize laboratory activities in general and microbiological investigations in particular and to develop a network of laboratories with referral and feedback systems. Special attention is being given to the important operational and managerial aspects of such a network. The importance of training staff to take account of local needs is evident, and WHO is providing advisory assistance in this respect. In addition to the paucity of laboratory technicians and assistants, almost all national health laboratory services are suffering from a serious lack of clinical pathologists and microbiologists. People qualified in these fields prefer assignment to medical schools rather than to posts within the health administration.

16.26 While WHO continued to assist vaccine production laboratories in the Region, the establishment of independent national control facilities encountered many problems. The Organization therefore arranged for the independent testing of biological substances in WHO reference laboratories on a voluntary basis. Most of the vaccine batches submitted proved to be of high quality and complied with WHO standards.

Environmental health

16.27 Since health and disease result from the success or failure of the body to adapt to environmental conditions, it is understandable that the modern world is increasingly concerned about protecting the environment. Development serves no purpose unless it ensures a better and more productive life for all. Existing services are badly distributed between urban and rural areas, and for that reason the major concern of WHO in environmental sanitation is the improvement of water supplies through adequate

distribution networks, the development of waste collection and disposal facilities, improvements in housing, and the control of vectors by sanitary engineering. Most basic sanitary measures for achieving these fundamental goals are incorporated in health services, especially in rural areas, and such measures are being carried out in 19 countries. The Organization has collaborated with UNDP in 14 planning and pre-investment programmes for water supply and wastes disposal in 13 countries.

16.28 In the countries of the Sahel zone, drought and cholera have aggravated the problems of safe water supply and the sanitary disposal of wastes. WHO has acted, on behalf of UNDP, as coordinator of bilateral and multilateral assistance for the emergency water supply programme.

16.29 Several countries are already showing an interest in the organization of adequate medical services for the protection and improvement of workers' health, and help in the establishment of occupational health services was given during the year in Dahomey, Gabon, Mali and Togo.

16.30 The Organization provided assistance to six countries in improving radiation health through the training of national technicians in the maintenance and repair of medical radiation equipment. The WHO network of regional reference centres for secondary standard radiation dosimetry and calibration facilities now comprises seven centres, one of which is in the African Region (at Lagos).

16.31 As a continuation of the Joint FAO/WHO Food Standards Conference for Africa, which was held in Nairobi in October 1973, the first session of the Coordinating Committee for Africa of the Codex Alimentarius Commission was held in Rome in June 1974. It was attended by representatives of 19 countries. During this session the committee discussed, among other topics, the development of modern legislation on food, the acceptance of the Codex Alimentarius standards, and the need for trained field inspection staff, competent chemists and microbiologists, and adequate laboratory facilities.

The Regional Committee

16.32 The twenty-fourth session of the Regional Committee for Africa was held at Brazzaville from 4 to 11 September 1974. It was attended by representatives of 29 Member States and an observer from

Botswana. Namibia, which had become an Associate Member in the course of the year, was represented for the first time. UNDP, UNICEF, FAO, and the Office of the United Nations High Commissioner for Refugees were also represented, as were four inter-governmental and four nongovernmental organizations. The session was attended by the Director-General.

16.33 The Committee decided to propose to the Executive Board that Dr Comlan A. A. Quenum be reappointed Regional Director for a further period of five years. It adopted a resolution disapproving the participation of any colonial Power in the sessions of the Regional Committee.

16.34 The discussion of the Annual Report of the Regional Director for the period 1 July 1973 to 30 June 1974 was again centred on the three key problems of the Region—the development of health services, the control of communicable diseases, and the education and training of health personnel. Many representatives stressed the importance of efficient information systems and the need to develop vital and health statistics.

16.35 In the development of health services in rural areas, the part played by traditional health workers was emphasized. Several representatives showed interest in the health programming process proposed by WHO.

16.36 The success of the smallpox eradication campaigns was greeted with general approval, but it was felt that epidemiological surveillance remained a problem. The onchocerciasis control programme in the Volta River basin area attracted much comment, and several speakers urged that the lessons drawn from the project be applied as rapidly as possible in other river basins affected by the disease.

16.37 With regard to health manpower development, concern for quality has begun to overshadow concern for quantity. The improvement of the quality of

auxiliary health workers remains a major preoccupation. The creation of regional centres for the training of sanitary engineers and technicians was particularly appreciated.

16.38 Noncommunicable diseases are arousing increasing concern in several countries, and some speakers called attention to the problems of physical rehabilitation, diseases of the oral cavity, mental illness, occupational health, and drug quality control.

16.39 The programme and budget proposals for the African Region for 1976 and 1977, which for the first time covered a period of two years, were approved for transmission to the Director-General.

16.40 In view of the grave economic situation in the world, it appeared that the most appropriate policy was to formulate large-scale integrated programmes rather than a multiplicity of specific projects. The budget provisions for 1976 and 1977 showed an increase over those for 1975 of 5.37% and 11.13% respectively, while the overall proposed budgets from all sources showed increases of 5.93% and 9.46% respectively over the 1975 figure. Of these proposed increases, 85% and 86% would be devoted to country activities.

16.41 The Committee approved the Regional Director's report on long-term planning for the strengthening of health services.

16.42 The Committee confirmed its previous decision to hold its twenty-fifth session at Yaoundé and decided that the twenty-sixth session would be held at Kampala.

16.43 The subject of the Technical Discussions was "Health care in rural areas". The Committee confirmed its previous choice of the subject "Dental health and the development of health services in Africa" for the Technical Discussions in 1975. "Traditional medicine and its role in the development of health services in Africa" was selected as the subject for 1976.

17. REGION OF THE AMERICAS

17.1 In 1974, the Organization continued to work with the countries of the Region toward the attainment of the goals set in the Ten-year Health Plan for the Americas. In accordance with a resolution taken in 1973 by the Directing Council of PAHO, WHO Regional Committee for the Americas, a method of evaluating the plan was established in 1974 and transmitted to governments. Assistance is available to enable governments to supply the necessary information. An intermediate evaluation is planned for 1977 and a final one for 1980.

Strengthening of health services

17.2 In 1974, 12 countries which have reformulated their national health policies in line with the ten-year plan were reprogramming their medium-term activities, and six countries were redesigning their health sectoral systems. Six other countries started to develop health information systems with assistance from the Organization in designing them and in training national personnel to operate them. Four governments initiated research on systems of financing in the health sector and the analysis of expenditures and costs. Eight countries made further efforts to extend the coverage of health services in rural areas, several of them making use of specially trained auxiliary personnel. A regional seminar on health services in rural areas was held in Venezuela with the participation of 40 physicians and nurses concerned with the planning, organization and supervision of such services.

17.3 Advisory services on hospital planning and construction were given to 13 countries, and all countries of the Region, including Canada and the USA, received assistance in improving hospital administration. Special projects to strengthen the organization of medical and nursing staff and hospital supporting services were in progress in 15 countries. Nine new programmes for intensive training in the administration of hospitals and medical care units were organized for a total of 268 medical directors, hospital administrators, heads of nursing departments and professors of medical care in Bolivia, Chile, Honduras, Peru, Uruguay and the English-speaking Caribbean countries.

17.4 Among the activities assisted in the field of rehabilitation were the extension of the national rehabilitation programme in Chile to include services for the visually handicapped, the restructuring of the prosthetic school in Argentina, and the provision of country-wide rehabilitation services within the public health systems of the latter country and of Brazil. In Mexico a study group was organized on rehabilitation for cancer patients and a workshop was held on rehabilitation after laryngectomy.

17.5 Health laboratory services were assisted through 21 projects in individual countries and six intercountry projects. In four countries, the projects are supported by UNDP. Surveys of public health and clinical laboratories were undertaken in the five countries of the Andean Pact, including an assessment of the feasibility of establishing central and district laboratories. Six countries were assisted in developing or improving national laboratories for the production and control of biological substances. Venezuela substantially increased its production of rabies vaccine. Mexico is producing finished type 1 Sabin poliomyelitis vaccine with the Organization's assistance and several million doses were available for use by the end of the year; type 2 Sabin vaccine was produced in bulk and is being tested.

17.6 Three countries have taken steps to define a system of nursing capable of providing the nursing personnel required by health programmes, and in several countries nurses began to participate in the planning and programming process. A six-week course on programming in nursing was offered to nurses who had been trained in basic health planning. Thirteen nursing care standards applicable to community nursing were prepared and presented at the Meeting of Ministers of Health of Central America and Panama. The implementation of standards of basic institutional nursing care previously elaborated with the Organization's assistance was begun in some 50 hospitals in Central America and Panama.

17.7 The Organization sponsored short intensive courses for professional nurse-midwives in the Caribbean area, Colombia and Panama. A multi-disciplinary seminar on the utilization and training of traditional birth attendants in maternal and child

health and family planning was conducted in El Salvador for 42 nurses, midwives and physicians from 15 countries. Four countries continued ongoing training programmes for traditional birth attendants.

Family health

17.8 In recent years, the countries of the Americas have shown a real concern for the improvement of the health of mothers and children, and have also evidenced a growing awareness of the health and social benefits that families and communities can derive from family planning. As most countries of the Region consider family planning as an integral part of health services for mothers and children, the need to provide the former has also stimulated the development of the latter.

17.9 Among the goals of the Ten-year Health Plan for the Americas are the reduction of infant mortality rates by 40%, mortality in children 1-4 years by 60%, and maternal mortality by 40%. This will require an expansion of the coverage of maternal and child health services by an estimated 60% for prenatal care, 60-90% for adequate care at delivery, 60% for postpartum care, 90% for care of children under one year and 50-70% for care of children 1-4 years. The advisory services of the Organization are available to assist countries in developing and carrying out long-term and medium-term projects in these areas and in strengthening the necessary training and educational programmes and information and evaluation systems. The Organization has also assisted countries in formulating project proposals for the expansion of family planning services with a view to securing financial assistance for them from UNFPA.

17.10 The Organization gave technical assistance in nutrition through 21 country and 11 regional or intercountry projects. These included the following activities: formulating and implementing national food and nutrition policies and programmes, strengthening the nutrition infrastructure in health services, determining the nutritional status of populations, improving institutional food services, expanding nutrition education and supplementary feeding programmes, training professional and auxiliary personnel in nutrition, developing and producing new weaning food formulas and high-protein vegetable mixtures, and conducting basic and applied research in nutrition.

17.11 A regional seminar in food hygiene that included a special symposium on foodborne infections was sponsored in collaboration with UNDP and the Government of Guatemala; 50 participants from 18 countries of the Americas attended. A food reference

laboratory has been established within the Institute of Nutrition of Central America and Panama (INCAP) with the financial assistance of UNDP, the Government of Guatemala and the Organization.

17.12 In health education, the Organization put emphasis on obtaining the effective participation of the community in ongoing health programmes and assisting in the consolidation, reorganization, and reorientation of the different national services concerned to enable governments to establish appropriate channels for the educational process.

Health manpower development

17.13 The Organization's activities for the development of health manpower can be grouped into three interrelated and complementary areas: the integration of teaching with the provision of services, educational research and development, and health manpower planning. The final objective is to extend health service coverage and to raise health levels by making the community an integral part of the health system.

17.14 Following the recommendations of the III Special Meeting of Ministers of Health of the Americas, the Organization fostered the cooperation of public and private health organizations with universities and medical schools. In 11 countries technical advice was given on the sequential functions necessary to achieve the integration of teaching and services. In this connexion the National University of Mexico approved a plan which provides for the training of physicians in special facilities built around health centres. Similarly, the English-speaking Caribbean countries have organized the training of paramedical personnel around four regional centres that take into consideration the health needs of the community.

17.15 As yet there is no uniform pattern in the teaching of preventive medicine. The Organization assisted in developing programmes at both undergraduate and graduate levels, in training professors in that field, and in promoting research, especially in epidemiology and administration. One of the benefits of this assistance has been the shift in emphasis towards community and social medicine, with growing concern about the integration of preventive medicine with other clinical areas. Similarly, there has been a move towards a wider utilization of the health services of the Region, the undertaking of analyses of health systems, closer interinstitutional relations, and a true integration of teaching and services.

17.16 The curricula of teaching institutions reflect and depend on the structure of those institutions and

the human resources available and their systems of values, as well as on the study plans, methodology, and evaluation techniques. In the health field these factors have contributed, in many cases, to a compartmentalized image of health, as opposed to one deriving from a body of knowledge directly related to the main health problems actually encountered and to the solutions that are proper to each society. The assistance given by the Organization to reforms in the teaching of the health sciences ranges from the support given to a single discipline in a traditional school to the formulation of overall institutional plans. In 1974, such assistance was provided to 50 institutions in 13 countries of the Region. In the area of educational technology, the Organization is developing modules or "packages" of educational material of flexible content, utilizing components from a variety of media. The aim is to assist in organizing the teaching/learning process on the basis of problems rather than disciplines, providing the students with a complete picture of a process occurring in nature.

17.17 The two Latin American Centres of Educational Technology for Health, established in Rio de Janeiro and Mexico City, continued their research and development activities in educational technology, produced audiovisual aids, and trained teachers in the use of the new resources and techniques now available.

17.18 The assistance given in planning health manpower included advisory services on the establishment of national manpower offices, the development of integrated manpower plans, the preparation of manpower models, and the collection of appropriate data.

Communicable diseases

17.19 The Organization organized a regional seminar on cholera control in Washington, D.C., and a Caribbean seminar on the same subject in Port-of-Spain. The conclusions and recommendations of these meetings were distributed to all the countries of the Americas as guides for activities to prevent the spread of the disease should it be introduced into the Region. In connexion with an outbreak of meningitis in Brazil, technical assistance was provided on diagnosis, control and prevention; information on the subject was distributed throughout Brazil and to all the countries of the Region. Brazil notified the discovery of a jungle focus of onchocerciasis in Amazonas State close to the Venezuelan border. This was the first notification of the disease in the country, and a study of the situation was made by the Evandro Chagas Institute, Belém, Brazil.

17.20 In 20 political units (with a total of some 80 million inhabitants) steady progress was made towards malaria eradication, but in parts or the whole of the remaining 14 political units transmission persists. In general, progress was hampered to a varying extent in different countries by increasing costs and shortages of insecticides due to inflation and the energy crisis.

17.21 In the veterinary public health field, assistance was provided to the Bahamas in formulating both human and animal health programmes. A report was presented to the Government recommending the establishment of a veterinary public health unit in the Ministry of Health, and proposing the creation of a division of animal health in the Ministry of Agriculture. Following an outbreak of anthrax in Haiti, the Organization assisted the Government in organizing an annual vaccination programme and provided vaccine and other supplies. The First International Conference on Venezuelan and Other Equine Encephalitis Virus Vaccines, jointly sponsored by the Organization and the authorities of Venezuela, was attended by 52 participants from the Region.

Noncommunicable diseases

17.22 Most of the countries of the Region are conscious of the obsolescence of their psychiatric services and the need to develop modern mental health programmes. During the year, six countries received assistance in reprogramming their mental health activities, reorganizing psychiatric hospitals, operating a demonstration project in community mental health, or improving rehabilitation services. One country was assisted in setting up special services for the mentally retarded with the cooperation of the community. The Organization assisted in an epidemiological study on alcoholism in six countries, the field work being terminated during the year; and an epidemiological study on suicide was begun in three countries. The teaching of mental health in the schools of public health was the subject of a study group convened in Caracas in December, with the participation of representatives from 10 schools.

17.23 The Organization is collaborating in epidemiological studies on rheumatic diseases in several countries and is assisting in training and research in this field. Advisory services concerning diabetes mellitus were provided to the Caribbean countries. This activity, together with the meeting of a study group on the subject, represents a preliminary contribution by the Organization to the problem of providing

integral care for diabetic patients. Support was also given to a special project designed to study the epidemiology of gall bladder stones in Chile, which has a high mortality rate from this cause.

17.24 The Organization collaborated in developing cardiovascular disease control programmes, with special emphasis on epidemiological research on risk factors such as lipidic phenotypes and diet, on the training of personnel, and on the dissemination of information.

17.25 The Organization assisted in programmes for the mass detection and early treatment of cancer, the establishment of cancer registries, and epidemiological cancer research with emphasis on patterns of cigarette smoking and other risk factors and on the education of the public and of health professionals in order to promote a comprehensive community-wide approach to cancer control.

17.26 A project submitted by the Government of Trinidad and Tobago for the establishment of a school for dental auxiliaries was approved by UNDP. This project, which had technical assistance from the Organization, is estimated to cost over US \$1 million over a period of three and a half years. The UNDP contribution will be nearly \$500 000. This is the first project for the training of dental auxiliary personnel to be funded by UNDP in the Region.

17.27 A grant from the W. K. Kellogg Foundation made it possible to initiate a programme in dental educational technology, in the Latin American Centre of Educational Technology for Health in Mexico City. This project is developing materials and systems in dental education for use in dental training programmes in all Spanish-speaking countries in the Region.

Environmental health

17.28 Substantial progress was made during the year in environmental health. Industrial development and uncontrolled urban growth have continued to influence the environmental conditions of most countries of the Region, and during the year Argentina, Brazil, and Mexico enacted legislation to set up high-level environmental protection agencies to develop national policies and to devise ways of dealing with pollution.

17.29 Water supply and sewerage continued to receive high priority among the activities carried out by the governments. Over US \$4000 million have

now been invested in water supply and sewerage projects, approximately two-thirds of this amount being provided by the countries themselves and the other third by international and bilateral credit agencies. At the end of the year 79% of the urban population and 27% of the rural population were served with adequate water supplies. Approximately 40% of the urban population were provided with sewerage services, while it is estimated that only 25% of the rural population had some sanitary means of excreta and waste disposal.

17.30 Under the Organization's institutional development programme, whose aim is to improve the management of agencies responsible for water supply and sewerage services at national or local level, 41 projects were under way in 24 countries. They represented an investment of over US \$6 million contributed by the countries concerned, UNDP, IBRD, the Inter-American Development Bank, and the Canadian International Development Agency.

17.31 A regional symposium on environment, health and development in the Americas, held in Mexico City in July-August with over 150 participants, served as a forum for presentation of the programme of pollution control in Latin American countries and discussion of future plans. Three UNDP-assisted projects dealing with the control of air, water, or soil pollution are in full operation in two cities of Brazil and in Mexico. The Pan American air pollution monitoring network, which operates under the technical supervision of the Pan American Centre for Sanitary Engineering and Environmental Sciences (CEPIS), continued to furnish valuable data on conditions prevailing in the metropolitan areas of the Americas. CEPIS maintained collaboration with the countries of the Region in the control of air, water, and soil pollution, industrial hygiene, water and wastewater treatment, housing and physical planning, and water resources and river basin development.

17.32 The Organization assisted the Government of El Salvador in a pilot study to ascertain the suitability of a rugged, simplified, battery-operated diagnostic X-ray unit for use in small rural health centres or hospitals where highly trained personnel are not available. In order to assist the national services for radiation monitoring of personnel using film badge dosimeters, initiated over the past 10 years by various health ministries and atomic energy authorities in the Region, a quality assurance intercomparison study was undertaken through the WHO Regional Reference Centre for Secondary Standards in Radiation Dosimetry in Buenos Aires.

Health statistics

17.33 The Organization participated in the development of various aspects of information systems in Brazil, Colombia, Costa Rica, and Honduras among other countries. Assistance was given in analysing the census of institutional resources of Ecuador, and the analysis of data from the inter-American investigation of mortality in childhood was continued. The increase in the number of requests from countries for advice concerning hospital records and statistics and for assistance in personnel training indicates a growing recognition of the importance of records and statistics for patient care, for hospital administration and for planning health services.

Health legislation

17.34 A working group sponsored by the Organization and the Andean Health Ministers Conference reviewed current health legislation, particularly as it relates to economic integration plans. The group analysed existing sanitary codes, laws and regulations in various countries with a view to reconciling them with current administrative structures, and recommended the establishment of permanent working groups, at both country and regional levels, to eliminate legal barriers to health measures and thus facilitate the proper development of economic integration programmes.

The Regional Committee

17.35 The XIX Pan American Sanitary Conference, which was also the twenty-sixth session of the WHO Regional Committee for the Americas, was held from 30 September to 11 October 1974 in Washington, D. C. It was attended by representatives of 26 Member States in the Region (including the Bahamas, a new Member) and by those of France, the Netherlands and the United Kingdom on behalf of territories in the Region. Observers from the United Nations, FAO, the Organization of American States, the Inter-American Development Bank, the International Committee of Military Medicine and Pharmacy and 20 nongovernmental organizations attended. The Director-General of WHO was also present.

17.36 Dr Héctor R. Acuña was elected Director of the Pan American Sanitary Bureau for a four-year term to begin on 1 February 1975, and his nomination as Regional Director for the Americas was communicated to the Executive Board of WHO. The outgoing Director, Dr Abraham Horwitz, was designated Director Emeritus of the Pan American Sanitary Bureau.

17.37 The appropriations for PAHO for 1975, amounting to US \$ 27 440 160, were approved, and the proposed WHO programme and budget estimates for the Region for 1976 and 1977 were endorsed for transmission to the Director-General.

17.38 The Regional Director presented the quadrennial report for 1970-73, with which was combined his annual report for 1973. The four-year report on health conditions in the Americas, 1969-1972, was also presented.

17.39 Planning, coordination and cooperation in health matters were one of the main topics discussed. The Committee recommended that Members increase their efforts to strengthen their own internal mechanisms for directing and coordinating health activities. Having studied the report of the UNDP Working Group on Technical Cooperation among Developing Countries, it recommended that the services of qualified personnel from within the American continent should be used so far as possible when requests for technical advice were met and that the Organization should give full support to teaching centres so that they can expand their educational work at the national and international levels. Governments were also urged to intensify their efforts to review their health policies and strategies in the light of the Ten-year Health Plan for the Americas, which is based on WHO's fifth general programme of work; and one of the resolutions adopted dealt with the relationships between this American regional plan and the fifth and sixth general programmes of work of WHO.

17.40 In relation to environmental problems, the Committee called for intensified collaboration on the part of the Organization with national environmental health programmes and for continued efforts to obtain resources from other international bodies to help support those programmes. Governments were also urged to give greater attention to the bacterial quality of drinking-water.

17.41 An expansion of the coverage of water supply programmes, as well as of those for excreta disposal, vector control and the management of foodstuffs, was among the measures recommended for the control of enteric diseases in the Region. Other communicable diseases given special consideration were malaria and parasitic diseases. The Committee expressed concern over the slow progress of the malaria eradication programme in some countries and urged their governments to increase their efforts in that connexion. It recommended that increased attention be paid to study of the parasitic diseases and that the training of epidemiologists specializing in these diseases be encouraged.

17.42 With respect to the development of health manpower, the Committee stressed the need to increase the number of trained nurses, and to develop and expand programmes of continuing education integrated in manpower development plans within national health plans. It also re-emphasized the importance of the regional programme for the supply of medical and nursing textbooks.

17.43 It was felt that the problem of mental health had not been accorded due priority or adequate resources in the Americas and recommendations were made regarding the correction of defects inherent in the traditional system of psychiatric care and regarding the establishment of centres for research on such problems as alcoholism, drug dependence and psychiatric disorders associated with delinquency.

17.44 To reinforce the national and international machinery for assisting countries affected by natural

disasters, the Committee recommended that countries establish permanent national organizations responsible for preventive measures and for coordinating the requisite national activities, that the Organization set up a standing committee to provide support and advisory services for countries in the Americas, and that relations be strengthened between the Organization and the other international organizations concerned with disaster relief. A report was presented by the Minister of Public Health and Social Welfare of Honduras giving details of the devastation wrought by the hurricane in September.

17.45 The Technical Discussions were on "Studies and strategies to reduce morbidity and mortality from enteric infections", and the topic "Methodologies for the formulation of national food and nutrition policies and their intersectorial implementation" was selected for 1975.

18. SOUTH-EAST ASIA REGION

18.1 Notwithstanding the difficulties due to inflation, monetary instability, food shortages, the energy crisis and scarcity of essential commodities, good progress was made during the year in implementing health programmes in the South-East Asia Region. A notable achievement was Indonesia's attainment of a declared smallpox-free status. Smallpox, however, continued to be a serious problem in the two remaining endemic countries, India and Bangladesh, although declining in the latter part of the year; and the antimalaria campaign experienced setbacks.

18.2 The emphasis being placed by governments and by WHO on the necessity for careful and detailed planning was reflected in the launching of new five-year plans in two countries of the Region and the implementation of present plans or preparations for subsequent plans in the others. Planning for ten or more years ahead has now become an integral part of national planning in many countries.

Strengthening of health services

18.3 Country health programming, the further development of rural health services, the training of multipurpose health workers, the adaptation of medical care to basic health needs, and operational research in health services were predominant among the activities aimed at strengthening the health services.

18.4 The development of health services, including improvements in management, was stressed in many countries—among them, Bangladesh, Burma, the Maldives, Nepal and Thailand. In Indonesia, the project for the strengthening of national health services was restructured, with three interrelated components: health planning and evaluation, research and development in health services, and a health care delivery system. The National Institute of Public Health, Surabaya, was converted into a Health Service Development Institute. In Nepal, operational studies for the delivery of integrated health services were completed in pilot areas, and the results permitted the elaboration of a pattern for strengthening the development of basic health services and for training multipurpose workers for duties in rural health services. In India, the aim is to provide a team of two such workers for every 5000 people.

18.5 Assistance was provided to Bangladesh, Mongolia and Nepal in designing health centres and hospital facilities, to the Democratic People's Republic of Korea in strengthening medical care services, to Indonesia in upgrading the rehabilitation centre in Solo to serve as a model to other countries in the Region, and to Burma and Mongolia in the field of rehabilitation.

18.6 Assistance to health laboratory services concentrated on improving the laboratories in individual countries to enable them to function as part of a comprehensive laboratory programme and on maintaining the standard of services in microbiology, virology and serology in support of country programmes for the surveillance of selected communicable diseases. Ten in-service training courses were organized and over 200 rural laboratory workers were trained at intermediate level. Assistance was given in six countries for the formulation of planned programmes for the development of health laboratory projects, and in the Democratic People's Republic of Korea in connexion with laboratory sciences and technology.

18.7 Regional facilities for interlaboratory evaluation in venereal disease serology are based at the Institute of Venereology, Madras, India. Closer cooperation at regional level has been maintained in vaccine testing, in the distribution of diagnostic reagents and in the verification and typing of bacterial and viral isolates.

Family health

18.8 Support was given to the further development of family health and maternal and child health services within the general health services of countries in the Region. School health services were further expanded in Burma, and studies were undertaken on the impact of school health programmes on the health services in Indonesia. In Mongolia, national training programmes in rehydration therapy have been organized with WHO assistance, as part of the Government's effort to strengthen services for the management of childhood diarrhoeal diseases, which are responsible for high childhood mortality.

18.9 In India, a national advisory group met in March to review with WHO the existing rural services for maternal and child health, including family

planning. The group agreed on a basis for the delivery of family health services within the general health services, and drew up guidelines for incorporation into field manuals for the multipurpose workers who are providing family health care in the rural areas. The training of obstetricians in abortion services has been a major technical development in the Indian family planning programme.

18.10 Assistance in assessing the nutrition situation was given in three countries to provide a basis for formulating nutrition programmes. In the project for the prevention of xerophthalmia in Bangladesh, now in its second year of operation, high-dosage vitamin A capsules supplied by UNICEF were distributed to over 90% of all preschool children. An interdisciplinary team visited Indonesia to assist in developing a national food and nutrition policy. The team devised alternative direct approaches to nutritional problems and discussed possible modifications in agricultural and food policy.

18.11 Health education activities were organized as an integral part of the health services in most countries of the Region, and were particularly concerned with community involvement and school health education. Research and study programmes in various aspects of health education were in progress in three countries. Health education manpower was being developed throughout the Region and postgraduate training in health education was available in a few countries.

Health manpower development

18.12 Activities in health manpower development in the Region during the year were concerned principally with teacher training, manpower planning and task-based education for all health personnel. Governments are beginning to appreciate the potential benefits of community health services, and are developing or expanding programmes for training multipurpose workers.

18.13 The regional teacher-training centres recently established with WHO and UNDP assistance in Sri Lanka (Peradeniya) and Thailand (Bangkok) are proving to be key activities in effective health manpower development in the Region. Both are expected to be self-sufficient in personnel by 1975. Short training courses for both national and international personnel were organized in 1974 in each of these centres, and in Bangkok a medical teachers' training course was held in November as part of a project for continuing education. Plans were made to set up similar training centres in other countries of the Region.

18.14 A large-scale UNDP-assisted project in medical education was approved during the year for Mongolia, where a national course in teacher training was organized. The third in the series of training courses on the teaching of human reproduction, family planning and population dynamics was held in Denpasar, Indonesia, in August with the participation of 30 medical teachers from four countries.

18.15 Efforts were made to have the planning of health manpower development included in national socioeconomic plans for the improvement of health services. A critical study was made of the manpower situation in the countries of the Region and the needs as indicated by the national health plans were assessed. The results of the WHO-assisted national health manpower study in Sri Lanka which was completed in 1973 have been analysed and, when published, will be of value in preparing national health plans.

18.16 In an effort to attract attention to the often neglected question of the training of medical graduates in the internship period, WHO assisted in organizing a seminar on the subject in Pondicherry, India, early in the year. The seminar recommended that the intern should undergo practical training at a rural health centre, and that his responsibilities should be gradually increased so that he would be equipped to take a position of leadership at the end of his internship.

18.17 To follow up the WHO-sponsored seminar and workshop in community medicine held in Surabaya, Indonesia, in 1971, a course on the community health aspects of medical education was organized at Peradeniya, Sri Lanka, in December. In Bangladesh, some 12 000 persons have followed short training courses designed to convert family welfare workers into multipurpose health workers with a view to strengthening the development of rural health services and building up the *thana* health centre complex. Auxiliary health personnel in Burma received refresher training but were gradually being replaced by qualified physicians.

18.18 An intercountry course on training in national planning for nursing was organized in New Delhi in November to give WHO nurses and national nursing leaders an opportunity to familiarize themselves with the planning process. Other activities in nursing and midwifery education were in connexion with the inclusion of community health activity in nursing and midwifery training and the revision of nursing curricula in line with the work actually required in the delivery of health services from various kinds of nursing personnel. WHO continued to assist in training much-needed tutors for nursing-midwifery schools, and

nursing administrative personnel for all health service institutions. In view of the lack of pertinent material for teaching nursing, texts and guidebooks were made available, and basic educational texts were translated into national languages. Two manuals were prepared by WHO nurses: "An Introduction to Paediatric Surgical Nursing" and a "Guide to the Care of the Low Birth-Weight Infant". They were distributed widely and are being translated into Thai.

18.19 During the year, 44 group educational activities supplemented the development of health manpower, particularly for work in national health planning and planning and organization in various disciplines.

18.20 Under a scheme for providing selected medical colleges with "student loan libraries", consisting of multiple copies of paperback textbooks, six such libraries were supplied to medical colleges in Bangladesh, Burma, Indonesia and Thailand.

18.21 The regional documentation centre on human reproduction, family planning and population dynamics continued to bring out annotated bibliographies and reviews of the current status of important aspects of the family planning field. A registry of specialists in the countries of the Region was also under preparation.

Disease prevention and control

18.22 The Organization continued to support systematic programmes for immunization against childhood diseases, smallpox, tuberculosis, diphtheria, tetanus, pertussis and poliomyelitis. However, limited resources, the cost of vaccines, transport and equipment, and inadequate health personnel and facilities still constituted serious obstacles.

18.23 In the smallpox eradication programme considerable progress was made in reducing the extent of the areas in Bangladesh and India where the disease remained endemic, although very large numbers of cases were recorded in parts of the latter country in the first half of the year. These were sharply reduced by greatly intensified surveillance and containment measures. Approximately 200 epidemiologists were recruited to coordinate the search and containment activities and to assist local staff. Medical officers and auxiliaries and vaccinators from low incidence or smallpox-free regions were assigned to heavily infected zones, and over 100 000 health staff of all categories were mobilized to carry out regularly repeated searches for cases in all hamlets, villages and towns in the highly endemic areas. The main difficulties encountered in the field were due to heavy rains and floods,

which hampered search and containment operations, and to an increase in population movements, especially to the urban areas. Nepal, the only other country in the Region which recorded smallpox cases in 1974, maintained its nonendemic status by successfully combating numerous importations from India.

18.24 The malaria situation in the Region gave no cause for complacency. In the eight countries that launched antimalaria programmes a number of years ago, the goal of eradication was not in sight in 1974 owing to financial, operational and technical constraints varying in degree from country to country. A deterioration was observed even in countries with organized eradication programmes. The general trend now is to adopt a strategy of malaria control rather than eradication. Bilateral assistance to antimalaria programmes has been reduced and countries in the Region increasingly sought financial and other assistance from WHO for the purchase of insecticides, drugs and spare parts for vehicles. The shortage of personnel trained in malaria work made it difficult to recruit for field projects.

18.25 National tuberculosis control programmes were being integrated into the basic health services in all countries except Bangladesh. The annual incidence of the disease was found to vary from approximately 70 per 100 000 population in Sri Lanka to 180 in Indonesia and the prevalence from 240 per 100 000 in Sri Lanka to 650 in Indonesia. An estimated 3 million persons were suffering from bacillary tuberculosis in the countries of the Region. In efforts to control the disease, emphasis continued to be on BCG vaccination and case finding and treatment carried out by the basic health services. In a number of countries, leprosy control also was being integrated into the basic health services and the treatment of registered cases was undertaken as a routine function. The leprosy control project assisted by WHO and the Danish Save the Children Organization in Indonesia also provided training for various categories of health workers.

18.26 Cholera was reported from Bangladesh, Burma, India, Indonesia, Nepal and Thailand and, for the first time in 20 years, from Sri Lanka. The case fatality rate varied from country to country and was as low as 10% for the Region. The gradual decline in the cholera fatality rate was believed to be a result of considerably improved epidemiological surveillance and more general use of rehydration therapy. Plague was reported only from Burma. In the WHO-assisted research project on the ecology of plague in the Bojolali district of Indonesia, a flea and rodent surveillance programme was completed in 60 high-risk villages.

18.27 As in recent years, dengue haemorrhagic fever was frequently reported from Burma, Indonesia and Thailand, continuing to be a very serious public health problem. Surveillance and control measures for this disease in the South-East Asia and Western Pacific Regions are now being coordinated, with the newly established WHO Technical Advisory Committee on Dengue Haemorrhagic Fever serving both Regions.

18.28 The Organization assisted governments in assessing the magnitude of health problems caused by cancer, cardiovascular diseases, mental ailments, drug dependence, and other chronic and degenerative diseases. Several governments undertook national studies on liver cancer, blindness and deafness. The incidence of liver cancer was reported to be high in Burma, the Democratic People's Republic of Korea, India, Mongolia and Thailand, and the etiological role of aflatoxins and hepatitis was being investigated.

18.29 Action was taken to develop programmes in public health ophthalmology in Bangladesh, Burma and India, where xerophthalmia, eye infections, injuries, cataract and glaucoma are leading causes of blindness. National surveys on deafness in different parts of India have indicated a high prevalence, especially in children of school age; pharyngeal infection and chronic suppurative otitis media were frequent causes. Further epidemiological investigations were undertaken and the introduction of measures for the prevention and control of streptococcal infection into the school health services was stimulated.

18.30 Support was given to community-oriented mental health care services with emphasis on enlisting community participation, training psychiatric personnel, and developing alternative training programmes to prepare personnel other than health workers for psychiatric services.

18.31 An intercountry workshop on hypertension and stroke, the first of its kind to be organized by WHO in the Region, was held in Madras, India, in February. Certain peculiar epidemiological features were noted, such as the occurrence of stroke in children as a result of infections, in adults following peripheral vascular lesions, and in women during the puerperium. As recommended by the workshop, a system of registration and follow-up of persons suffering from hypertension was established in some centres in India and Sri Lanka, with a view to identifying high-risk groups.

Environmental health

18.32 Progress has been generally satisfactory in the programmes assisted by WHO and UNICEF for the

provision of safe water, both piped and from hand pumps, to rural communities in six of the ten countries of the Region. The UNDP/WHO-assisted project in Nepal for the preparation of a master plan for water supply and sewerage for Greater Kathmandu and Bhaktapur was completed, and UNDP approved preparatory assistance for pre-investment studies for a water supply and sewerage scheme for Male in the Maldives. In Indonesia, WHO is the executing agency for UNDP projects for a master plan for sewerage and sanitation in Jakarta, for rural water supplies in East Java, and for the strengthening of the environmental health components of health services in Irian Jaya.

18.33 Advisory services were provided to several countries in air pollution control, prevention of water pollution, drilling, solid wastes, preventive maintenance of water supply systems, and organization of courses in rural water supply design, construction and maintenance. WHO assisted research in public health engineering and associated fields at the National Environmental Engineering Research Institute in Nagpur, India. The education and training of personnel in environmental health work received priority; in general all field projects concerned with environmental health make provision for the training of auxiliaries.

18.34 In the field of radiation health, assistance was given to the efforts of governments to protect health workers and populations from ionizing radiation by establishing or strengthening personal film badge services, training personnel for monitoring and surveillance, instructing health workers in radiation installations concerning the principles of radiation protection, and setting up national services for health protection against radiations. Seventeen institutions from the Region participated in the postal dose intercomparison service for radiotherapy centres, started in collaboration with the International Atomic Energy Agency. WHO arranged for a number of departments of pathology and forensic medicine in the Region to collaborate with UNSCEAR and the Health and Safety Laboratory of the United States Atomic Energy Commission in collecting and evaluating data on the strontium-90 content of human bone from tropical and rice-diet countries.

The Regional Committee

18.35 The Twenty-seventh session of the Regional Committee for South-East Asia was held in Denpasar, Indonesia, from 3 to 9 September 1974. Representatives were present from all Member countries of the Region. The session was also attended by repre-

sentatives of UNDP, UNICEF and six nongovernmental organizations in official relations with WHO.

18.36 Introducing his Annual Report, the Regional Director noted with satisfaction the formulation of country health programmes in two countries and made particular mention of the launching of pilot projects for the delivery of health services, plans for providing training to new categories of health personnel and the setting up of national medical teacher training centres in many countries. WHO had taken steps to meet the emerging needs of countries of the Region in planning, formulating and implementing programmes and in many other fields.

18.37 He complimented Indonesia on attaining smallpox-free status and said that top priority was being given to smallpox in countries where the disease was still endemic. He expressed the hope that governments in the Region would participate fully in the proposed WHO global programme of immunization against specific diseases, as the success of national programmes of that nature would have a far-reaching effect on the present morbidity and mortality rates in the Region.

18.38 During the discussion of the Annual Report of the Regional Director, representatives stressed the importance of providing health care coverage in rural areas in the Region, and expressed appreciation of the emphasis placed by WHO on training the personnel needed in view of the rate of population growth, the insufficient increase in the number of physicians in some countries, and problems such as the lack of amenities for health workers in rural areas and the migration of health personnel to other countries. Communicable diseases were recognized as still being the leading cause of mortality in all age-groups in some countries. Views were exchanged on the serious threat represented by the recrudescence of malaria, and a resolution was adopted asking the Regional Director to try to ensure timely supplies of insecticides for antimalaria programmes, to take steps to develop the capacity for the manufacture of insecticides within the Region itself, and to promote research. Special concern was also expressed about dengue haemorrhagic fever.

18.39 In connexion with the proposed health charter for Asia, the Committee was informed that steps would be taken to secure external aid for specific country projects and that country health information was being collected and analysed. Concrete proposals would be formulated and placed before a subsequent session of the Committee.

18.40 The Committee noted that the Organization was now paying greater attention to noncommunicable diseases in the Region. Since many diseases, both communicable and noncommunicable, could be prevented at the source by environmental health measures, emphasis was placed on community water supplies.

18.41 Among the other subjects discussed by the Regional Committee were environmental and health monitoring in occupational health, continuing education for physicians, WHO's human health and environment programme, intensification of research in tropical parasitic diseases, and WHO's fifth general programme of work for a specific period. The Committee supported the notion that there should be greater regional responsibility for WHO's research projects other than those of global interest, and suggested the establishment of a regional standing advisory committee for biomedical research.

18.42 The Committee confirmed its previous decision to hold its twenty-eighth session in September or October 1975 in Dacca and decided to hold its twenty-ninth session in India. Finally, it noted the possibility of an invitation from Thailand to hold its thirtieth session in that country.

18.43 Technical Discussions took place on the subject of "Provision of safe water supplies to rural communities in South-East Asia". "Organization of research in disciplines of regional priority, with special reference to methods for expanding the coverage and improving the quality of health services in the community" was chosen as the subject for the Technical Discussions to be held in 1975.

19. EUROPEAN REGION

19.1 The work of the Organization in the Region is primarily that of a dynamic coordinator and is largely concerned with the collection, analysis and dissemination of information. The publications of the Regional Office continued to attract a great deal of interest and their distribution has now been automated in order to achieve greater flexibility and selectivity. Among those issued in 1974 was the third in the series *Public Health in Europe*, on communicable diseases; the second edition of the monograph *Health Services in Europe*; and a collection of summary reports of technical meetings held in the Region in 1973.

Strengthening of health services

19.2 The European Conference on National Health Planning held in Bucharest in March was a milestone in the development of health planning in the Region and was based upon reports on previous activities, including the first studies of the planning process in different socioeconomic conditions. A number of Member States agreed to participate in future studies. The Conference recommended the continuation of the annual training courses in health planning, held since 1969, and the course directors reviewed the curricula in the light of the Conference's findings.

19.3 Management tools and their application to health services were also studied. A project systems analysis of the delivery of maternal and child health care in Scotland was carried out in order to assess the value of this method in assisting health services in the Region. A course on operational research in public health was repeated at the University of Louvain, Belgium, and assistance was given to Finland in reviewing the planning, delivery and evaluation of a cardiovascular and cerebrovascular disease control and prevention project in North Karelia.

19.4 Member States are becoming increasingly concerned about the role of the handicapped in society and the health and economic problems resulting from the aging of populations. A working group on rehabilitation in long-term and geriatric care held in Copenhagen in February concluded that institutional treatment should be kept to a minimum and placed emphasis on teaching individuals how to meet the problems of old age.

19.5 Great interest was shown throughout the Region in the planned new edition of the directory of health laboratory services. Direct assistance was given in developing national laboratory services and collaborative studies were undertaken for the typing of cholera and other vibrios and the cost/benefit analysis of automation in clinical chemistry and haematology laboratories.

19.6 The functions of the nurse within the health services and recommendations to minimize constraints on the discharge of those functions were discussed at a planning meeting for a medium-term programme in nursing and midwifery in Europe and at a liaison meeting with intercountry associations on WHO's nursing and midwifery programme in the Region.

19.7 The programme on the prevention of road accidents includes studies to define high-risk groups of drivers, the relationship between alcohol consumption and driving fitness, and how systems analysis can be applied to the whole problem of road accidents. The studies were undertaken in cooperation with the International Institute of Applied Systems Analysis, and are intended for presentation to a conference in 1975 on the epidemiology of road traffic accidents. A survey was made of changes in road accident patterns resulting from restrictions imposed in consequence of the fuel crisis.

Family health

19.8 Many of the needs and problems of the family are directly connected with those of the community to which it belongs and can be met only by general measures in the community or environment. A conference on new trends in maternal and child health was held in Moscow in November to discuss their implications for health planning and staff training.

19.9 Efforts were made to provide pre-service training and retraining in ongoing local programmes for all levels and types of personnel in family health programmes, and to revise the basic curricula in schools of allied health personnel with a view to including family health or family planning components; a considerable number of staff from UNFPA-funded

country programmes attended the courses organized jointly with the International Children's Centre.

19.10 A symposium on the preparation of health personnel in health education with special reference to postgraduate education was convened in Cologne, Federal Republic of Germany, in November; it was sponsored by the Government with the cooperation of the Federal Centre for Health Education.

Health manpower development

19.11 The move towards greater professionalism in medical education in Europe has been reflected in the establishment of the Association for Medical Education in Europe with which the Organization maintains close cooperation.

19.12 However, the proportion of medical schools that have introduced educational services and research is very small and progress in that direction is often impeded by inflexible organizational and administrative structures; nor is educational planning, where it exists, geared systematically to health manpower needs.

19.13 The final report on the capacity study on graduate medical education in Europe, which started in 1971, has been completed. The aim of the study was to investigate the relationship between graduate medical education and health manpower needs and to collect information on methods of training and numbers of specialties and subspecialties in the countries of the Region, the length of training and the mechanism of certification. The results should enable Member States to compare their own practices and requirements with those of other countries, to use the factual data provided as a basis for their health manpower planning, and to devise equivalence procedures between countries.

19.14 A working group on medical teacher training was convened in Warsaw in April to review existing or potential teacher training programmes in the Region and to indicate how ministries of health and education and WHO could be associated with such programmes and help teachers of health professionals to improve their competence as instructors or to acquire skills in special educational fields. A workshop on teaching methods for teachers of social and preventive medicine in Marseilles, France, in September, concentrated on the formulation of educational objectives and the design of evaluation instruments.

19.15 The objective testing of the professional competence of both undergraduate and postgraduate medical students is beginning to be generally accepted

as a necessary instrument in educational management. A working group of specialists in educational measurement met in Copenhagen in May, and made recommendations on objective examination systems and grading methods.

19.16 Medical schools and universities in the majority of European countries are administered and controlled by ministries of education. As the Organization deals with ministries of health, inadequate communication between the two ministries is often an obstacle to educational advances in the Region. A second conference of deans, teachers and senior administrators from medical schools was organized in November in Copenhagen in order to strengthen the contact between the health and education systems begun at the 1973 conference.¹

19.17 The WHO-assisted Institute of Health Technology in Constantine, Algeria, has stimulated much local interest in the application of modern teaching methods and has encouraged teamwork in the public health training given to auxiliary personnel (*assistants médicaux*) and medical students.

19.18 The Organization has continued to cooperate with the Council of Europe on studies on the comparability of degrees and diplomas held by general practitioners.

Communicable diseases

19.19 At a WHO conference on the prevention of the intercountry spread of infectious diseases, held in June in Izmir, Turkey, it was agreed that the major cause of such spread is the vast and ever-increasing volume of international travel and trade in foodstuffs and animal feeds. Agreement was reached on both national and international preventive measures and on the need for exchange of epidemiological information between countries. To that end, all countries in the Region were provided with a list of persons directly responsible in each country for intercountry cooperation in this field.

19.20 Through the intercountry programme for the surveillance of poliomyelitis conducted in six countries, the Organization assisted in evolving practical surveillance procedures suitable for other countries as well. Assistance was given also to national surveillance programmes, antimalaria programmes and public health ophthalmology activities as appropriate, as well as for activities to prevent the further international spread of cholera after the outbreak in Portugal.

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, paragraph 10.28.

19.21 Through continued contact with various national institutes, efforts were made to improve the methodology employed in food control laboratories. A second postgraduate course in food microbiology and hygiene was held in the Netherlands in August for food hygienists in the Region.

Noncommunicable diseases

19.22 The long-term programmes in mental health and cardiovascular diseases, now four and six years old respectively, have both reached a stage at which planning, national and international, can realistically be based on the data and experience gathered in the first phase. In both programmes the use of pilot areas in different countries has made it possible for Member States to participate actively and this practice is being extended.

19.23 In the mental health programme, the steering committee on the planning and control of the programmes in child and adolescent mental health and alcoholism and drug dependence which met in Copenhagen in January was representative of several disciplines, Member States and international organizations. Its recommendation that the programme be extended until 1980 was endorsed later in the year by the Regional Committee. In considering the priorities to be pursued, the steering committee stressed the need to extend activity in the fields of child psychiatry and mental health education.

19.24 A questionnaire devised in 1970 for use in collecting national data on mental health services is being revised in the light of experience in the pilot areas so that it may serve as a model for Member States. Other information-gathering activities include a study on health insurance and mental illness, initiated in 1973, which is providing useful material for a long-term project on cost/effectiveness, and a study on youth advisory services, which will provide background material for working groups planned for 1975 and 1977.

19.25 Among meetings held during the year, mention should be made of a working group on mental health services in pilot study areas, a symposium on mental disorders in the elderly, and a conference on suicide and attempted suicide in young people.

19.26 Work in the Region on alcohol and drug dependence should benefit from a study on national control policies for alcohol undertaken in 1974 in collaboration with the Finnish Foundation for Alcohol Studies.

19.27 At the fourth in a series of international training courses, designed to supplement national

training in mental health epidemiology and statistics, existing data collection systems were studied and measures for improvement discussed.

19.28 A steering committee for the long-term programme in cardiovascular diseases has been established, comprising a number of European experts, to define the essential elements of comprehensive cardiovascular disease control programmes and guide national authorities in evaluating and assessing progress. At its first meeting, in June, it emphasized the importance of integrating community cardiovascular disease control programmes into existing medical care delivery services, and a consultation on such programmes was held in Geneva in November. Prior to the meeting of a working group in Turku, Finland, in May, which discussed the evaluation of studies on comprehensive rehabilitative and preventive programmes for patients with myocardial infarction, a coordination meeting had been arranged with a view to establishing and maintaining closer contact between national and international groups working in this field.

19.29 The results of the study on ischaemic heart disease based on registers in 21 countries are being prepared for publication, and a working group in March prepared a simplified registration scheme capable of use with different systems of medical care delivery.

19.30 In order to establish the diagnostic criteria for stroke and evaluate and analyse methods of early detection and treatment, registers for stroke patients have now been established in seven European areas; and at a meeting of investigators in November, recommendations were made for the control of stroke and hypertension in the community.

19.31 The courses on the rehabilitation of cardiac patients are to be discontinued but the organization of national courses should be helped by a manual that it is planned to prepare on that subject.

19.32 A study has been completed on the organization of dental health services in Europe and the report, when published, should serve as a basis for national planning. A second study, on the training and use of auxiliary dental personnel, is proceeding. A course on methods for epidemiological surveys of oral conditions, held in Moscow in June, was attended by participants from the African and South-East Asia Regions as well as Europe.

Prophylactic and therapeutic substances

19.33 A directory of European drug control agencies was prepared with a view to strengthening collabo-

ration between Member States in the Region. A European symposium on clinical pharmacological evaluation in drug control—the third of its kind—took place in Heidelberg, Federal Republic of Germany, in November. Following the meeting of a working group in May, it is planned to link work on the organization and functioning of poisons control centres in Europe with that on toxicity information systems under the long-term programme for environmental pollution control.

Environmental health

19.34 The continuous presence of waterborne diseases, particularly in the southern part of Europe, underlines the need for constant vigilance and further improvement of basic environmental sanitation. The movement of more than 50 million tourists and a smaller but significant number of migrant workers greatly increases the risk of epidemics.

19.35 In Europe, the Organization has intensified its cooperation with national environmental sanitation programmes and its efforts to improve intercountry collaboration in the field of environmental health and to increase the rate of investment in water supply and sewerage installations. An initial survey of water pollution in the Danube basin has been begun, and at a meeting in Copenhagen in December preparations were made to assist Mediterranean countries within the Region in controlling coastal water quality. Despite the difficulties in pollution control resulting from the increased cost of energy, eight countries have invited WHO to collaborate in the preparation of national or local pollution control programmes, the creation of research institutions and the training of staff.

19.36 The long-term programme in environmental pollution control, which has been in operation for five years, was analysed at a meeting in June and reviewed at the twenty-fourth session of the Regional Committee in September. It was recommended that a steering committee be set up to guide the programme and report on progress. The programme continues to provide manuals and guides for work in country projects in environmental health and to assist health administrations in developing national environmental health programmes along mutually compatible lines. The establishment of appropriate legislative and administrative mechanisms is an important aspect of the country projects for control of environmental pollution now being carried out by the Organization in cooperation with UNDP.

19.37 A study on manpower requirements in environmental health conducted in five pilot areas was

evaluated at a meeting at the Regional Office in September and it was decided to prepare a manual containing basic data for the planning of training courses in environmental health, and information on existing courses in Europe.

19.38 More emphasis will be laid in the future on the correlation of environmental and occupational health care and the application of the results of occupational monitoring to industrial safety in the Region. A major occupational health undertaking in Europe is a UNDP-assisted project, for which WHO is the executing agency, aimed at strengthening the Institute of Occupational Medicine at Lodz, Poland, and the units collaborating with the Institute, in order to develop a national system of health surveillance for workers exposed to industrial poisons and to establish a comprehensive toxicology information system.

Health statistics

19.39 In the collection of health data, particular emphasis was placed during the year on the addition of epidemiological activities to projects in health planning and evaluation. At the Conference on National Health Planning (paragraph 19.2), it was pointed out that planners needed standardized information on disability, dependency and absenteeism, and stress was laid on the importance of developing new epidemiological techniques and methods in connexion with planning and evaluation and on the related need for new training programmes.

19.40 Also of considerable interest from the point of view of health statistics were proposals for the development of epidemiological surveillance of the long-term health effects of environmental hazards, drafted by a working group that met in Copenhagen in September to review the present situation and discuss the results of epidemiological studies that had monitored the health effects of environmental hazards.

19.41 Chronic respiratory disease was also the subject of studies in 1974; the activities of the UNDP-financed environmental pollution control projects in Europe formed the basis for a collaborative study of respiratory disease in schoolchildren in relation to air pollution in selected countries with both high and low mortality rates from respiratory disease in an attempt to clarify the reasons for the differences.

19.42 A working group on health information services, convened in Copenhagen in June, outlined fields in which the Organization could usefully promote activities and indicated priorities in its work in Europe for the collection, storage and dissemination of country information. A study on water pollution information

is being developed as a first step towards an environmental health information service.

19.43 A working group was organized in Brussels in May to evaluate the regional courses on vital and health statistics. It recognized a continuing need for training in health statistics and epidemiology at post-graduate level in the Region and recommended that further information should be obtained about needs of different countries for health personnel, including health statisticians, and for national and international training facilities.

The Regional Committee

19.44 The twenty-fourth session of the Regional Committee for Europe was held in Bucharest from 10-14 September 1974 at the invitation of the Government of Romania. Representatives of 31 countries of the Region participated. Also present were representatives of UNDP, UNICEF, the Council of Europe, the International Committee of Military Medicine and Pharmacy, the Organization of African Unity, and a number of nongovernmental organizations, as well as an observer from the International Children's Centre.

19.45 Introducing his report for the period 1 July 1973 to 30 June 1974, the Regional Director said that the Regional Office had cooperated with countries in studying ways of improving managerial skills in the administration of national and local health services. He stressed the growing importance attached by leading experts to the expansion and improvement of educational systems, both for the health professions and for the public. He referred in particular to nursing education, to the functions of nursing in modern health services and to the setting up of an intercountry steering committee on nursing and midwifery. He made particular mention of a new development in research activities in the Region with regard to health services. In this context, the Organization had collaborated with the staff of the International Institute of Applied Systems Analysis.

19.46 In the ensuing discussion, speakers welcomed the establishment of the correct priorities in the implementation of the long-term programmes in cardiovascular diseases, mental health, environmental pollution control, and health manpower development. The cholera outbreak in Portugal and the measures taken to control it were outlined by the representative of Portugal.

19.47 The Committee considered proposals for the continuation until 1982 of the long-term programme in

environmental pollution control, which included, in particular, the development of monitoring of the environmental and health effects of air and water pollution and noise, and the study of hazards arising from changes in the structures of energy production. It was to be expected that future requests from Member States would be connected with specific intercountry pollution problems and that collaboration with other agencies would be intensified. The Committee approved the continuation of the programme, but stressed the need for additional financial contributions to the Voluntary Fund for Health Promotion for work in this field.

19.48 After a discussion on the Regional Office's role in the field of national health planning and its evaluation system for WHO regional programmes, the Committee approved the continuation of the programme on long-term planning and evaluation along the lines indicated in the Regional Director's report. The Committee also requested that an assessment be made of WHO's fifth general programme of work covering a specific period as it related to the European Region.

19.49 For the first time, the programme and budget proposals presented to the Committee covered two years, 1976 and 1977. The programme and budget estimates for the Region for the biennial period were endorsed for transmission to the Director-General.

19.50 A tentative projection of the regular programme for the period 1978 to 1982 was welcomed as a move towards overall medium-term planning. The Committee adopted a resolution inviting the written comments of Member States on the tentative projection and requesting that the document concerning it be transmitted to the Director-General, along with the comments, for consideration during the preparation of the sixth general programme of work.

19.51 The Committee, after consideration of Health Assembly resolutions WHA19.31, WHA20.38 and WHA21.34, whereby technical assistance to Portugal was suspended, unanimously adopted a resolution strongly recommending that, in view of changes in the relations between that country and the African territories, the next World Health Assembly restore to Portugal the full rights of a Member State of the Organization.

19.52 After considering the report of a working group set up to consider the introduction of German as a working language in the Regional Committee and the Regional Office, the Committee adopted a resolution recommending the use of German as a

working language of the Regional Committee and requesting the Regional Director to examine, in association with the Governments of Austria, the German Democratic Republic and the Federal Republic of Germany, the financial and material implications of that recommendation and to submit proposals to the Director-General and the Executive Board.

19.53 The Committee confirmed its decision to hold its twenty-fifth session in Algiers in September 1975 and accepted the invitation of the Government

of Greece to hold its twenty-sixth session in Athens in September 1976.

19.54 The Technical Discussions were on "The health protection of the elderly". The Committee confirmed the selection of "The place of occupational health in public health services" as the subject for the Technical Discussions at the twenty-fifth session and selected "The role of nursing staff in the health field in the 1980s" as the subject for the Technical Discussions at the twenty-sixth session.

20. EASTERN MEDITERRANEAN REGION

20.1 Since the country planning system was introduced in 1971, the planning arrangements adopted by WHO in countries of the Eastern Mediterranean Region have been increasingly coordinated with those of the planning bodies of the governments and of international and bilateral assistance agencies. In this way, it has been possible to determine priorities more precisely and to find more suitable, practical and economical solutions to health problems. Despite the considerable differences in financial situation and in trained health manpower resources among the countries of the Region, all but three have incorporated a health sector in their national plans for social and economic development and are thus taking a wider view of their health situation.

20.2 During 1974, a more flexible and pragmatic policy for WHO assistance in general was developed. Efforts were made to promote health programmes with long-term or medium-term rather than short-term objectives and to introduce less costly and more practical systems of health service delivery that required fewer highly-trained professionals. The use of suitably trained national personnel, when available, as opposed to international experts was encouraged, for example, by making incentive payments for work or supervisory travel in rural areas. Village health workers were increasingly used. They are trained in carefully chosen, priority health tasks within their abilities, and are given support and supervision by a combination of existing health institutions which also evaluate their work. The overlapping of responsibility and duplication of services and costs that in the past were often a feature of such institutions working independently have been to a large extent avoided.

20.3 The adoption of a coordinated rather than a fragmented approach to health activity has led to a re-examination of basic health services projects with extensive training components, the development of a more rational policy with regard to the provision of health manpower in line with needs, and closer liaison between those responsible for strengthening health services and those responsible for developing health manpower.

Strengthening of health services

20.4 Studies carried out in the Region tend to show that, to be efficient, the organization of health services must be collective, embracing public and private, curative and preventive, peripheral, intermediate and central services. In most countries of the Region, the level of technical knowledge is now such that national health authorities can define their problems and find solutions to fit individual situations, with assistance and guidance from WHO if necessary. WHO has also continued to assist in implementing, managing and evaluating the resultant health programmes. To that end, senior public health advisers have been assigned to 14 countries. Their services have, in addition, proved most useful in emergency situations, such as floods in Pakistan and the Syrian Arab Republic and drought in Ethiopia, as well as in the settlement of persons returning to the Southern Sudan. In most of these emergencies, and also in that resulting from the situation in Cyprus, WHO has assisted governments in coordinating the aid received from various United Nations agencies.

20.5 Community health as a sociopolitical goal is not yet given the priority that it merits. In some instances, efforts are directed to purely physical objectives such as the construction of hospitals and training centres which do not always contribute to an improvement of the health of the community and may even aggravate the maldistribution of health services between urban and rural areas. The completion of a survey of the health services in West Azerbaijan, Iran, and the training of new types of community health workers—as part of a pilot project being conducted in that province—should help in finding the means to develop the health services further and to improve community health. The institute for the development of health services and manpower established in Teheran will carry out research on ways of bringing basic health services to the whole population.

20.6 Although most countries have a well-developed hospital system, WHO is requested from time to time to review the administrative structure of hospitals and to develop ancillary services; Iraq, Jordan, Kuwait and Lebanon benefited from such assistance in 1974. Supplies and equipment were provided to improve intensive care and neurosurgical units in Egyptian

hospitals, and medical rehabilitation programmes, including occupational therapy, speech therapy and prosthetic/orthotic services, were assisted in Iran, Jordan, Lebanon, Pakistan, Saudi Arabia and the Syrian Arab Republic.

20.7 The assistance provided in the development of health laboratory services in different countries varied with the availability of trained manpower and funds. In some cases, it was possible to organize or strengthen already existing central and peripheral health laboratories, produce bacterial and viral vaccines, introduce quality control techniques and link health laboratories more closely with epidemiological surveillance. In others, assistance has been mainly directed towards the training of personnel at all levels, the reorganization of existing laboratories and blood banks, and the provision of supplies and equipment. Ten countries sent participants to a training course on vaccine and antisera control held in Iran.

20.8 WHO continued to assist family planning programmes, some of which were broad-based and some maternity-oriented, partly by organizing seminars and awarding fellowships for the training of family planning and maternal and child health personnel. Although morbidity rates for mothers and children showed a considerable decrease in most countries of the Region, they were still high in comparison with those in most developed countries. Governments, with WHO and other international aid, concentrated on the three interrelated causes of ill-health most commonly affecting mothers and children: malnutrition, infections, and poor family planning.

20.9 A seminar to promote nutritional education in schools was held in Khartoum in January; another, on school health services, in Baghdad in March; and a third, on improvement of the health of the preschool child in Mogadishu in July. A seminar on food control was held in Beirut in March.

Health manpower development

20.10 The number of medical schools in the Region has now grown to 51 and some of them have a substantial annual student intake. Thus the requirements for undergraduate medical training can largely be met within the Region and it has been possible to shift the emphasis of WHO assistance from the mere provision of training to improving its quality. One hundred medical faculty teachers were given short intensive courses in modern educational methodology, mainly at the Regional Teacher Training Centre, Pahlavi University, Shiraz, Iran; and training institutes in the

Region were assisted in providing new approaches in educational technology. Medical schools dealing with large numbers of students particularly welcomed these new techniques, and arrangements were made with the Medical Faculty of the University of Cairo to collaborate with WHO in evaluating techniques to meet the specific difficulties faced by a large faculty. The report of a workshop on the needs for research in medical education, held in Alexandria in March, awakened the interest of a number of medical schools in undertaking applied research.

20.11 While facilities for undergraduate training are numerically sufficient, systems for postgraduate training are by no means uniform. It is WHO's policy to encourage postgraduate training within the Region whenever possible, and facilities for such training were assessed in Iran, Iraq and Lebanon.

20.12 Concurrently, efforts were made to find better ways of training the large numbers of auxiliary and middle-level personnel that are needed to man the health services. The Centre for Educational Technology in the Health Sciences, Cairo, which is assisted by UNDP, UNICEF and WHO, can be of substantial help in this respect by supplying learning materials in Arabic not only to Egypt but to other Arabic-speaking countries also.

20.13 During the 25 years that WHO's fellowship programme has been operating in the Region, more than 7000 fellowships have been provided. In the twelve months to mid-1974 alone, 667 were awarded. The overall educational quality and the management of the programme have constantly been improved. One of its important features was the granting of fellowships for teacher training and for participation in workshops organized by WHO on the training of teachers in health professional schools, particularly medical schools.

Communicable diseases

20.14 As countries of the Region become increasingly able to carry out national communicable disease control programmes with only consultant advice from WHO, more attention has been given to strengthening and promoting epidemiological, laboratory and statistical services. A beginning was made in building up an epidemiological profile of the Region, and advice was given on epidemiological services and on surveillance. The Organization collaborated with the Government of Saudi Arabia in preparations in view of the special problems that might arise during the Mecca Pilgrimage in connexion with gastrointestinal diseases, a possible resurgence of cerebrospinal meningitis, and

environmental sanitation. Encouraging prospects for the control of cerebrospinal meningitis were opened up by the successful results of trials in the Sudan of the polysaccharide A vaccine against the disease.

20.15 Remarkable success has also attended the smallpox eradication campaign. Transmission appears to have been interrupted in Pakistan, while in Ethiopia, the only country in the Region where smallpox remains endemic, the disease has been restricted to limited areas. The malaria situation varies widely in the Region. The disease has been controlled to low levels in all countries of the Mediterranean basin but not in the eastern and southern parts of the Region. Schistosomiasis remains one of the main causes of morbidity in the Region; leishmaniasis, trypanosomiasis and onchocerciasis still present problems but they are confined to more limited areas. Assessments of communicable eye disease programmes in a number of countries have shown that there has been a remarkable decrease in the severity of trachoma and in the prevalence of bacterial and viral conjunctivitis.

Noncommunicable diseases

20.16 During the year governments in the Region turned more of their attention to chronic non-communicable diseases as the traditional communicable disease problems decreased in importance. Cancer, cardiovascular diseases, dental health and mental health were all subjects on which WHO advice and assistance were requested.

20.17 A symposium on lymphomas, held in Tunisia in March, underlined the importance of this specific malignant disease in Eastern Mediterranean and North African countries; lymphomas account for 10% of all neoplasms in the area. An interesting working hypothesis put forward was that of a possible relationship between communicable gastrointestinal diseases and gastrointestinal lymphomas.

20.18 Many countries of the Region are making efforts to improve and expand their psychiatric health services. Of particular interest are the programme for training in psychiatry for general duty doctors in Iran, the psychiatric and rehabilitation centre in Benghazi, Libyan Arab Republic, and the psychiatric inpatient unit at the General Hospital, Sfax, Tunisia. Baseline data on psychiatric facilities in 20 countries were compiled for use in planning. The information obtained was made available to the WHO Expert Committee on Organization of Mental Health Services in Developing Countries, which met in Geneva in October.

20.19 A comprehensive approach to problems of drug quality, efficacy and safety and to the rational supply, distribution and use of drugs was discussed at the meeting of Sub-Committee A of the Regional Committee in September. A survey of the curricula of pharmacy schools in the Region was initiated, and universities in Iran, the Libyan Arab Republic, and Tunisia were assisted in developing modern teaching programmes in pharmacy and pharmacology.

Environmental health

20.20 Despite the considerable efforts made in recent years to remedy general insanitary conditions and control pollution of the environment, these remain major causes of ill-health in the Region. The rapid population increase in some countries has led to correspondingly greater demands being made on the environmental health services and to growing needs for wastewater and solid waste disposal systems and safe water supplies.

20.21 WHO, under its regional pre-investment planning programme, has assisted Afghanistan, Iran, Lebanon and Yemen to lay the groundwork for large-scale UNDP-assisted projects for the disposal of wastes and the provision of water supplies. The completion of these pre-investment projects has enabled final engineering designs to be drawn up ready for early implementation. It is satisfactory that these projects have attracted large investments from international and bilateral agencies. In Pakistan, pre-investment planning for the provision of water supply has been completed, and the project will be financed and implemented by the country itself, with advice from WHO.

20.22 To strengthen and develop the environmental health services the Organization is assisting the training of all categories of personnel that are needed to formulate programmes and operate services, thus providing a cadre of counterpart personnel who will eventually be able to advise governments on environmental matters. WHO is assisting courses in sanitation in six countries and in public health engineering in three others.

20.23 In line with the Organization's efforts to lessen the risks from medical and other types of radiation, the programme in the field of radiation medicine was widened to include the training of radiographers, radiotherapists and radiation health specialists.

20.24 To help overcome the great difficulties experienced in the maintenance and repair of medical equipment, a regional training centre was to open in

Cyprus during 1974, but this project has had to be delayed owing to recent events. In the meantime, WHO has given a wide distribution to a technical report containing a practical outline for the development of national services for the maintenance and repair of medical equipment.

The Regional Committee

20.25 Sub-Committee A of the Regional Committee for the Eastern Mediterranean met at the Regional Office, Alexandria, Egypt, from 10 to 13 September 1974. Sub-Committee B did not meet.

20.26 The meeting of Sub-Committee A was attended by representatives of Afghanistan, Bahrain, Cyprus, Egypt, Ethiopia, France, Iran, Iraq, Jordan, Kuwait, Lebanon, Libyan Arab Republic, Oman, Pakistan, Qatar, Saudi Arabia, Somalia, Sudan, Syrian Arab Republic, Tunisia, United Arab Emirates, and Yemen. UNDP, UNICEF, UNRWA and FAO were represented, and representatives or observers of 18 other intergovernmental organizations or nongovernmental and national organizations also attended.

20.27 In the discussion of the Regional Director's Annual Report for the period 1 July 1973 to 30 June 1974, satisfaction was expressed at the progress achieved in the 25 years since the opening of the Regional Office and continued support was pledged for WHO's efforts to improve health conditions. The concept of greater collaboration between countries was welcomed, and in that connexion it was felt that two suggestions made by the Regional Director of ways to make the best use of regional resources should be considered further. One was for a "health development bank" financed and managed by the countries that had the necessary capacity, the other for a "regional cooperative" which should seek to acquire the technology to meet almost all the needs

of the health services. The aim would be, for instance, to establish insecticide and pharmaceutical industries, plants for electromedical equipment and similar joint ventures within the Region, thus eliminating dependence on external sources. Such intraregional resources would be particularly valuable in emergency situations.

20.28 The changing health situation in the Region as traditional scourges such as communicable diseases were controlled or eradicated was recognized to have led to a need for new approaches to meet new problems. The regional programme reflected the evolution of needs and trends.

20.29 The situation peculiar to the Eastern Mediterranean Region, where the stage of development is not always in line with the financial resources, was discussed. In accordance with resolutions adopted by Sub-Committee A at its meeting in 1973, voluntary contributions had been solicited from the wealthier countries to promote the regional programme in the next few years. It was suggested that wealthier countries might finance their WHO-assisted health projects from their own resources through a funds-in-trust arrangement, thus releasing more funds from the WHO regular budget to assist less wealthy countries.

20.30 The proposed programme and budget estimates for the Region for 1976/77 were endorsed for transmission to the Director-General.

20.31 Sub-Committee A confirmed its acceptance of an invitation from the Government of Iran to hold the 1975 session in that country.

20.32 "Rationality in supply, control and utilization of drugs" was the subject of the Technical Discussions.

21. WESTERN PACIFIC REGION

Strengthening of health services

21.1 WHO collaboration with governments in the strengthening of health services during the year involved two main activities—the planning and management of health programmes, and the organization and delivery of health care.

21.2 Assistance to countries in planning varied in content and included organizing planning units and defining their terms of reference, collating and analysing data for planning purposes, developing national health policies, and formulating the health component of national development plans. Assistance was also given in the programming of specific health development projects and national health plans. A regional and a national course on health planning and management were organized as a means of preparing national staff at central and intermediate levels for their planning duties.

21.3 Collaboration with governments in the organization and delivery of health care took many forms. In some cases, it involved the review and updating of health legislation. In others, attention was given to the current functioning and job loads of various categories of health personnel, and arrangements were proposed for their equitable and effective distribution. For nurse/midwife categories, studies were undertaken on aspects such as manpower supply and demand, task distribution and supervisory functions, and working relationships with other categories in the health team.

21.4 Consideration was also given to the improvement of existing arrangements for health care delivery in some countries, to the provision of logistic support to peripheral health services, and to ways of increasing the effectiveness of referrals between hospitals and peripheral health services. In the collaboration between governments and WHO for strengthening national health services there has been a growing tendency to have recourse to systematic measures, usually involving operations research, in preference to the more empirical practices adopted in the past.

21.5 Increasing attention is being given to improving the management of medical care institutions. Efforts to improve hospital services focus on the better training of personnel, improved administrative pro-

cedures, and programmes for the repair and maintenance of hospital equipment. In some countries, facilities were introduced for the medical rehabilitation of war casualties and of people disabled in road or industrial accidents or by certain diseases. An inter-country team prepared recommendations for making expertise available to developing countries and giving them access to designated regional centres for training in aspects such as hospital design, administration and the repair and maintenance of hospital equipment. UNDP funding is being sought for this project.

21.6 In view of the fact that a considerable amount of expensive medical equipment in the Region remains unusable for want of repairs, efforts were also made to interest and stimulate certain countries and territories in the development and strengthening of their maintenance services.

21.7 With the increasing commitment of a number of developing countries to industrialization, the prevention of associated health hazards and the improvement of the health of the working population have become imperative. In urban areas, where industrialization is greatest, health departments receive assistance in the improvement of their sanitary facilities and the adoption of regulatory measures designed to maintain or improve environmental health standards. Assistance is being given in the preparation of technical personnel in the public and private sectors dealing with occupational health; this takes the form of regional courses on occupational health, country seminars concerned particularly with small industries, and the provision of advisory services for the organization of technical units and facilities that ensure more effective supervision of the health aspects of industry and trade.

21.8 Collaboration with governments in the strengthening of vital and health statistics is being pursued concurrently with other health activities, the aim being to ensure the provision of adequate information for assessing the health conditions and needs of the population and for formulating national health programmes and plans in a realistic way. Specific projects were undertaken to improve the health and medical records of health centres and hospitals and to organize central health statistical units. A country health information system is being developed for use

in the Region; it is designed to provide geographical information, socioeconomic and demographic data, and information on health services and health-related activities, including epidemiological, environmental, and communications information.

Family health

21.9 The past year has seen a growing acceptance of the family health approach in the promotion of health of mothers and children. A number of multidisciplinary family health projects embracing maternal and child health, family planning, nutrition, and health education were formulated and implemented. In all instances, efforts were made to develop these WHO-assisted family health projects as an integral part of the country's basic health services. Integration was helped by group educational activities at both regional and country levels. The projects included staff training, systematic programme planning and development, the strengthening of programme management and administration, and the health education of the public.

21.10 Special attention was given to health education as a vital component in all health programmes, particularly those concerned with family health, environmental sanitation, and drug dependence. High priority was given to the training of health education personnel.

21.11 Nine countries in the Region received assistance in the formulation of food and nutrition policies and in the development of applied nutrition programmes and the nutrition component of family health services. Close coordination was maintained with other agencies such as UNICEF, FAO, WFP, and the South Pacific Commission in assisting Member States with their nutrition activities.

Health manpower development

21.12 Efforts on the part of countries to produce sufficient numbers of trained health personnel to man the health services have continued unabated throughout the year, various methods and approaches having been used in different countries and situations. It is noteworthy that operational research studies to determine the most efficient utilization of personnel and services are gaining wider acceptance throughout the Region.

21.13 At a stage when many countries are considering the introduction of new categories of health workers into their services, a WHO seminar on medical assistants proved to be most timely because it demonstrated the value and place of this type of worker in

the health system. Following a study undertaken with WHO assistance, the Government of Fiji decided to introduce the category of "medical assistant" into its health services and requested WHO to provide long-term advisory assistance in the training programme for these workers.

21.14 The regional teacher training programme has progressed very satisfactorily. While most activities in the form of multidisciplinary workshops were centred on the Regional Teacher Training Centre at Sydney, Australia, assistance was given to three on-site workshops in Japan, New Zealand, and the Republic of Viet-Nam. The regional programme is now entering its second phase, with several countries requesting WHO assistance for the establishment of national teacher training centres. With the impending introduction of a master's programme in health personnel education at the University of New South Wales, Australia, staff for national teacher training centres and other educational units in health training institutions will no longer need to leave the Region for this level of training.

21.15 The Organization has continued to render considerable assistance with training in health institutions at three levels: basic, postbasic, and postgraduate. In many instances, WHO staff have had to assume operational responsibilities because of lack of suitably qualified counterpart staff. In long-established institutions, there appears to be a greater need for specialist consultants than for long-term advisers.

21.16 Efforts have been made to ensure that group educational activities are organized not as isolated events but as specific contributions to long-term programmes. This principle was applied, for example, in a seminar on the teaching of psychiatry in medical schools, a meeting of deans of medical schools, a seminar on the teaching of nutrition in schools of medicine, the first regional seminar on medical assistants, and a workshop on the training of nursing teachers.

21.17 The keen interest displayed by governments in requesting WHO fellowships for their staff testifies to the important place occupied by the fellowships programme in the overall programme of WHO assistance.

Communicable diseases

21.18 The shortage of epidemiologists, the inadequacy of laboratory services, and the limited availability of reliable statistical data continued to

hamper the development of epidemiological services in many countries. The production and exchange of epidemiological information therefore remained at a relatively low level. As a consequence, although communicable diseases continued to be a major source of morbidity and mortality in the developing countries of the Region, this cannot be readily inferred from the available statistics.

21.19 The serious epidemics of dengue haemorrhagic fever in Malaysia and the Republic of Viet-Nam in 1973 continued in 1974, and reports from the former pointed to an increase over the 1973 incidence there. Outbreaks of dengue-like fever were reported in French Polynesia and Tonga. Of particular significance was the convening in Manila in March of the first meeting of the WHO Technical Advisory Committee on Dengue Haemorrhagic Fever, which reviewed the epidemiology of the disease and prepared guidelines to help in its diagnosis, treatment, and control. Due attention was given to vector control.

21.20 Bacterial infections of the gastrointestinal tract are still prevalent in the Region, particularly in the developing countries, and regional courses were held on diagnosis, treatment, and control. They were supplemented by another course on enteric bacteriology which was aimed at facilitating laboratory diagnosis.

21.21 The Western Pacific Region has been spared any serious setback in its antimalaria campaign. However, progress during the year was slow in some countries, owing mainly to operational and financial difficulties aggravated by the ending or reduction of bilateral assistance. On the other hand, UNDP assistance, provided through WHO to several malaria control programmes in the Region, gave new vitality to these programmes. All governments undertaking antimalaria campaigns continue to give the programmes high priority, and special efforts are being made to combat the disease in areas where it constitutes an important obstacle to socioeconomic development or endangers major development schemes.

21.22 The fourth seminar on filariasis and vector control, held jointly by WHO and the South Pacific Commission in Western Samoa in July, revealed that systematic measures for control of the disease—mainly mass administration of diethylcarbamazine citrate supplemented by improved sanitation for mosquito control—have resulted in a great reduction of microfilaria rates and densities in eight countries and territories. In three of them the vectors of filariasis are also the vectors of malaria, and DDT residual spraying has been carried out for antimalaria purposes.

21.23 An evaluation of the tuberculosis control programme in the Republic of Korea showed that the prevalence of the disease had been reduced by 21% in five years at an average annual cost of US \$0.07 per capita. This very successful programme was carried out by the Government with WHO guidance and with the support of UNICEF and the Korean National Tuberculosis Association. Great emphasis was placed on BCG vaccination, on sputum examination as a primary method for case finding, and on domiciliary chemotherapy. Tuberculosis control activities in the Republic of Korea are an integral part of the general health services.

21.24 The regional centre for the production of freeze-dried BCG vaccine, located at Alabang, Rizal, Philippines, has been remodelled to accommodate new equipment being provided by UNICEF.

Noncommunicable diseases

21.25 The development and strengthening of basic dental health services and the training of dental manpower continued to receive priority, particular emphasis being placed on increased utilization of dental auxiliaries and improved clinical productivity of individual dentists. Countries were assisted with the organization of national seminars and advised on the upgrading of dental education. Closer links were established with dental training institutions within the Region to ensure the most effective placement of fellows.

21.26 Activities aimed at the prevention and control of drug dependence increased markedly during the year. An epidemiological study of drug dependence was carried out in the Philippines. On the basis of the findings of this study and those of a pilot epidemiological study carried out in Malaysia in 1973, a working group drew up guidelines for the development of programmes for the control of drug dependence at both regional and country levels.

Prophylactic and therapeutic substances and health laboratory technology

21.27 Assistance was given in the Region not only for the quality control of the prophylactic and therapeutic substances in use but also for the establishment of adequate regulations on their production and distribution.

21.28 Following the establishment of health laboratories at national or central level, the emphasis of WHO assistance has progressively shifted towards the development of laboratory networks at intermediate and peripheral levels. In this connexion, the shortage

of laboratory personnel, especially in the supervisory category, has proved to be a pressing problem in several countries. High priority was therefore given to training staff in microbiology, basic laboratory tests, maintenance of equipment, laboratory administration and management, and quality control.

21.29 To stimulate immunization programmes against a number of communicable diseases, assistance continued to several countries in the production of toxoids and of vaccines against smallpox, tuberculosis, plague, and rabies.

Environmental health

21.30 While basic sanitation remained the main concern of the environmental health programme, many other activities were carried out, including water supply planning, the construction of rural water supplies, the design of municipal water and sewerage systems, the training of water systems operators and rural health inspectors, the treatment of agricultural wastes, solid wastes management, and vector control. Support was given to the large-scale UNICEF-assisted programmes in Laos and the Republic of Viet-Nam, which are aimed at improving water supply and sanitation in health facilities and schools. In a number of countries assistance was given in carrying out activities connected with the control of water and air pollution, including legislation, the organization of laboratories, the establishment of monitoring and information systems, and staff training. The Philippines received assistance from the Asian Development Bank, UNDP, and WHO in regard to the public health aspects of water resources development studies for Laguna de Bay.

21.31 Weak or indifferent environmental health institutions, lack of trained and experienced staff, and insufficient financial resources for building the essential water supply and basic sanitary infrastructure continued to be the main problems affecting national environmental health programmes. While most countries in the Region are still striving to overcome basic traditional environmental health deficiencies, the growth of major industrial centres has led in some instances to massive air and water pollution problems that are difficult to correct. The pollution problem is compounded by the lack of institutions capable of planning industrial development in parallel with control of the physical environment.

21.32 Finally, although the pressure of more immediately obvious health problems in the Region has hitherto led to limited attention being paid to radiation health, several countries are now initiating activities in this field.

The Regional Committee

21.33 The twenty-fifth session of the Regional Committee for the Western Pacific was held in Kuala Lumpur from 2 to 9 September 1974. The meeting was attended by representatives of 17 Member States, including those responsible for territories in the Region, and of Papua New Guinea, an Associate Member. Representatives of UNICEF, the International Committee of Military Medicine and Pharmacy, and nine nongovernmental organizations in official relations with WHO were also present.

21.34 The Annual Report of the Regional Director for the period 1 July 1973 to 30 June 1974 was reviewed. The Committee examined the proposed programme and budget estimates for 1976 and 1977 and, in requesting the Regional Director to transmit them to the Director-General, emphasized the importance of WHO's role in assisting governments to develop and implement new projects and in encouraging them to assume responsibility for ongoing projects that have proved feasible.

21.35 The Committee considered a report by the UNDP Working Group on Technical Cooperation among Developing Countries. Welcoming the recommendations that report contained, the Committee commended the efforts being made by WHO to encourage developing countries to devise specific programmes on technical cooperation among themselves and expressed the hope that governments of developing countries would cooperate with WHO in those efforts.

21.36 The Committee reviewed a report on the action taken in connexion with its previous resolutions on methods of disinsecting aircraft. Following the recommendation of the Twenty-seventh World Health Assembly most of the countries and territories of the Region have accepted as valid the disinsecting of aircraft on international flights by the dichlorvos vapour system, although some have reserved the right to disinsect on the ground as an additional measure if they consider it necessary. Follow-up studies on the possible deleterious effects of the system and the development of resistance in certain insects were proposed by the Committee.

21.37 Although vigorous action is being taken to improve existing practices for controlling the quality of water and food in international aviation, the Committee emphasized the need for further improvement and constant vigilance to ensure that high standards are reached and maintained.

21.38 A progress report presented to the Committee on the action taken in connexion with its previous

resolutions on drug dependence revealed that while drug dependence *stricto sensu* affects relatively few in number of the Region's population, though it could become a more widespread and grievous problem in the future, in many countries and territories the abuse of alcohol is of more importance at the present time. The Committee emphasized the need for the regional programme to be continued and expanded to include both drug dependence and alcoholism so that the experience gained from projects conducted at national level, combined with the results of research, will lead to effective control methods. The Committee also considered that the excessive use of tobacco should be studied in conjunction with measures to be taken to combat drug dependence and alcoholism.

21.39 The Committee supported the World Health Assembly's resolutions on the development of the antimalaria programme and the intensification of research on tropical parasitic diseases—especially on the Region's most prevalent parasitic diseases, schistosomiasis and filariasis. In addition, it cited cholera, dengue haemorrhagic fever, Japanese encephalitis, viral hepatitis, typhoid fever, and rabies as diseases that it would like to see given priority in WHO's research programme.

21.40 The Committee noted the encouragement being given to Member States of the Region to utilize the methods of systems analysis in the formulation and management of projects and to involve themselves in studies aimed at adapting these methods to their individual needs. It requested the Regional Director to develop such methods so that Member States could be provided with assistance, guidance, and expertise.

21.41 The Committee considered that its future sessions could be concluded in one week. It confirmed that its twenty-sixth session would take place at the Regional Office in Manila and accepted a tentative invitation from the Government of Japan to hold the twenty-seventh session in Japan.

21.42 The theme of the Technical Discussions was "Control of vector mosquitos of dengue haemorrhagic fever". The Committee reviewed the purpose and procedures of the Technical Discussions and decided that they should in the future be replaced by a Technical Presentation dealing with a special subject or health problem, to be given by one or two recognized experts in the chosen topic. "The control of tuberculosis in the Western Pacific Region" was selected as the topic for the Technical Presentation in 1975.

PART III

PROJECT LIST

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PROJECTS IN OPERATION IN 1974

This part of the Annual Report contains a list of country and intercountry projects and of interregional activities (interregional projects and activities under assistance to research) that were in operation for the whole or part of the period from 1 December 1973 to 30 November 1974. Projects for which no material assistance was provided during the period are not included, nor are collaborating centres that received WHO support (a list of such centres is contained in Annex 5).

The dates following the project title indicate the duration of assistance to the project, whether such assistance is continuous or intermittent. For projects not completed during the period under review, the date of estimated termination has been given (in italics) where possible.

For projects—or phases of projects—completed during the period, details of the assistance provided by the Organization and a brief description of the work done between the dates indicated are given. For continuing projects such details have not as a rule been included. No details are given for projects concerned entirely with the award of fellowships. (The numbers of fellowships awarded in 1974, by subject of study and by Region, are given in Annex 7.)

As in former Annual Reports, an attempt has been made to summarize the immediate results of completed projects and, where the nature of the work has permitted, to show the extent to which the objectives of the projects have been achieved.

The projects are grouped by Region in the following order: Africa, the Americas, South-East Asia, Europe, Eastern Mediterranean, and Western Pacific. In order to present a balanced account of the health programmes in the Americas, the list for that Region includes the projects assisted by the Pan American Health Organization (PAHO) in addition to those assisted by WHO. For each Region, projects in individual countries are grouped in the alphabetical order of countries, followed by intercountry projects; within each country, and for intercountry projects, the listing is in accordance with the programme classification structure used in the *Proposed Programme Budget for the Financial Years 1976 and 1977* (Official Records No. 220), the old project number being given, in parenthesis, after the new project identification symbol. The few projects that do not have such a symbol are given, in the order of their project numbers, at the end of each group. Interregional activities are listed, also according to the abovementioned programme classification structure, at the end of this part of the Annual Report.

The abbreviations used for sources of funds are as follows:

R	WHO regular budget	PS	PAHO Special Fund for Research
UNDP	United Nations Development Programme	PT	PAHO Textbook Fund
UNDP/UN	Funds received from United Nations, FAO or UNESCO as executing agency for UNDP-assisted projects	PW	PAHO Community Water Supply Fund
UNDP/FAO			
UNDP/UNESCO			<i>Voluntary Fund for Health Promotion</i>
FR	Reimbursable funds	VA	Special Account for Assistance to the Least Developed among Developing Countries
FT	Funds-in-trust	VC	Special Account for the Cholera Programme
ON	Onchocerciasis Fund	VD	Special Account for Miscellaneous Designated Contributions (General)
UNEP	United Nations Environment Programme	VG	Special Account for Medical Research (Specified) — General
UNFDAC	United Nations Fund for Drug Abuse Control	VH	Special Account for Medical Research (Specified) — Human Reproduction
UNFPA	United Nations Fund for Population Activities	VK	Special Account for Miscellaneous Designated Contributions (DANIDA)
WI	Fund of the United Nations for the Development of West Irian	VL	Special Account for the Leprosy Programme
<i>Pan American Health Organization</i>		VM	Malaria Eradication Special Account
PR	PAHO regular budget	VN	Special Account for Medical Research (Specified) — National Institutes of Health, USA
PG	Grants and other contributions to PAHO	VR	Special Account for Medical Research (Unspecified)
PH	Pan American Health and Education Foundation	VS	Special Account for Smallpox Eradication
PI	Member governments of the Institute of Nutrition of Central America and Panama	VW	Special Account for Community Water Supply
PK	PAHO Special Fund for Health Promotion		
PM	PAHO Special Malaria Fund		
PN	Grants and other contributions to the Institute of Nutrition of Central America and Panama		

Names or acronyms of any other agencies or entities cooperating in a project are given in parenthesis after the source(s) of funds.

AFRICAN REGION

Botswana

SHS 001 (4001) Development of health services (1971-) R UNDP UNFPA—To develop health services, integrate maternal and child health activities into them, strengthen measures for the epidemiological surveillance and control of communicable diseases, and incorporate the teaching of public health into training programmes for health personnel.

HMD 001 (6101) Training centre for health personnel (1972-) UNDP FT—To train personnel, including nurses, midwives and sanitarians, at the National Health Institute.

HMD 099 (6041) Health manpower development : fellowships R

BSM 001 (3201) Management assistance to the Water Utilities Corporation (1973-) UNDP—To improve the operation of the Water Utilities Corporation and train the necessary staff.

Burundi

SHS 001 (4001) Development of health services (1969-) R UNDP UNICEF—To expand and improve the health services, integrate into them activities in nutrition, environmental sanitation, maternal and child health and health education, and train personnel.

HMD 099 (6041) Health manpower development : fellowships R

ESD 001 (1001) Epidemiological services (1972-) R UNFPA—To establish an epidemiological service for the surveillance and control of communicable diseases, strengthen the health statistics services, develop laboratory services and train personnel.

PIP 001 (3301) Master plans for sanitation and drainage, Bujumbura (1972-) UNDP FT—To make engineering, administrative and financial studies in respect of sanitation and drainage in Bujumbura, draw up master plans, and prepare feasibility studies and final design for first-stage construction.

4201 Health laboratory services (1971-) R—To develop the Bujumbura blood transfusion centre, establish centres in the interior of the country, and train the necessary staff.

Central African Republic

SHS 001 (4001) Development of health services (1969-) R UNDP UNICEF—To develop the health services, integrate into them activities in maternal and child health, health education and communicable disease control, promote environmental sanitation work, develop health statistics, and train staff.

HMD 001 (4401) Nursing education (1966-74) UNDP—To plan nursing and midwifery services as part of the development of health services; to prepare national nurses to assume responsibility for the services, and to train nurses, midwives, and nursing teachers.

HMD 099 (6041) Health manpower development : fellowships R

SME 001 (1801) Smallpox eradication (1970-) R UNICEF—To carry out a smallpox eradication programme, and to organize the maintenance phase of the programme and epidemiological surveillance.

BSM 001 (3301) Sanitation and drainage, Bangui (1969-) UNDP—To draw up a plan of work for sanitation in a pilot district of Bangui and a management plan, train personnel, and carry out sanitation and drainage work in the pilot area.

Chad

SHS 001 (4001) Development of health services (1964-) R UNDP UNICEF—To develop and strengthen the health services, with emphasis on maternal and child health and environmental health, and to train personnel.

HMD 001 (4401) Nursing education (1962-) R UNICEF—To improve the national school of nursing, and to train professional and auxiliary nurses and nursing teachers.

HMD 099 (6041) Health manpower development : fellowships R

SME 001 (1801) Smallpox eradication (1968-) R—To carry out a smallpox eradication programme, and to organize the maintenance phase of the programme and epidemiological surveillance.

Comoro Archipelago

SHS 001 (4001) Development of health services (1970-) R—To continue activities for the control of communicable diseases, including leprosy; to study malaria epidemiology and plan and implement antimalaria measures; and to develop the health services and train personnel.

HMD 099 (6041) Health manpower development : fellowships R

Congo

SHS 001 (4001) Development of health services (1964-) R UNICEF—To draw up national health plans, strengthen the facilities and improve the activities of the health services, control communicable diseases, and train staff.

HMD 001 (4401) Nursing education (1967-) R—To develop nursing education; to train nurses, midwives and other categories of staff for the health services; and to train teachers.

HMD 099 (6041) Health manpower development : fellowships R

ESD 001 (1001) Epidemiological services (1972-) R—To strengthen communicable disease control services, carry out epidemiological surveillance, develop laboratory services, and train personnel.

Dahomey

SHS 001 (4001) Development of health services (1968-) R UNICEF—To implement the plan for development of the health services, and integrate into them maternal and child health and environmental health activities; to develop a sanitation programme in urban areas; to improve methods and facilities for communicable disease control; and to train personnel.

Dahomey (continued)

SHS 002 (4201) Health laboratory services (1970-) R
UNDP—To develop the national health laboratory service within the public health services and train staff.

HMD 001 (6201) Department of Health Sciences (1970-) R
—To develop the Department of Health Sciences of the University of Dahomey.

HMD 002 (4401) Nursing education (1969-) R UNICEF—To plan nursing and midwifery services, adapt curricula to the needs of the country, and train nursing and midwifery teachers.

HMD 099 (6041) Health manpower development : fellowships R

Equatorial Guinea

SHS 001 (4001) Consultant services (1969-) R—To plan and develop health services, giving particular attention to general administration; to develop medical care and strengthen environmental health measures; and to train personnel.

HMD 099 (6041) Health manpower development : fellowships R

Gabon

SHS 001 (4001) Development of health services (1969-) R—To develop the health services, with emphasis on maternal and child health and environmental sanitation, and to train personnel.

HMD 001 (4401) Nursing education (1961-) R—To define the educational objectives for all categories of health personnel and implement training programmes in accordance with these objectives; to provide inservice training in administration, teaching methods and public health for staff in charge of practical training and, gradually, for all serving staff; and to train teachers.

HMD 099 (6041) Health manpower development : fellowships R

PIP 001 (3301) Master plans for sanitation and drainage, Libreville (1972-) UNDP—To draw up a master plan for a sewerage and drainage system for Libreville and prepare feasibility studies for first-stage construction.

Gambia

SHS 001 (4001) Development of health services (1974-) R—To implement the national health plan; develop the health services; organize an epidemiological service, giving particular attention to tuberculosis control; develop maternal and child health activities and health laboratory services; improve environmental sanitation in rural areas; and train staff.

HMD 099 (6041) Health manpower development : fellowships R

PIP 001 (3301) Survey on basic environmental problems and master plans for sewerage and drainage, Banjul and Kombo St Mary (1973-) UNDP—To draw up master plans for sewerage and drainage in Banjul and Kombo St Mary.

Ghana

HED 001 (4501) Health education (1974) UNDP—Fellowships were awarded under this project, for which a health education specialist was provided between 1967 and 1973. The work done during that period is described in the Annual Report for 1973.¹

HMD 001 (6201) Medical school, Accra (1968-) R—To strengthen training at the medical school; to develop the physiology department—particularly the laboratories for practical training and research; and to train physiology teachers.

HMD 099 (6041) Health manpower development : fellowships R

ESD 001 (1001) Epidemiological services (1974-) R—To develop epidemiological services, organize epidemiological surveillance of communicable diseases and strengthen measures for their control, and train the necessary staff.

PIP 001 (3202) Rural water supply and sanitation pilot project (1972-) UNDP—To draw up a long-term programme for rural water supplies, carry out preparatory surveys, and train staff.

Guinea

SHS 001 (4001) Development of health services (1968-) R
UNDP UNFPA UNICEF—To develop and strengthen the health services, including communicable disease control, epidemiological surveillance and health laboratory services, and to train the necessary staff.

HMD 001 (6201) Training in health sciences (1969-) R—To develop medical education at the Conakry medical school so as to train physicians able to carry out the tasks involved in ensuring health coverage of the population.

HMD 002 (4401) Nursing education (1973-) R—To develop the programmes for training nursing and midwifery personnel, health technicians and laboratory technicians in accordance with the needs of the country, including in them training in public health; to provide further training for personnel in service; and to train teaching staff.

MPD 001 (2201) Onchocerciasis control (1967-) R—To continue epidemiological surveys of onchocerciasis and implement a pilot project for control of the vector.

SME 001 (1802) Smallpox eradication (1969-) R—To carry out a smallpox eradication programme, and to organize the maintenance phase of the programme and epidemiological surveillance.

Ivory Coast

MCH 001 (5101) Maternal and child health services (1964-) R
UNICEF—To strengthen maternal and child health activities, vaccinate children against the most prevalent communicable diseases, and train health and social service personnel in the care of mothers and children.

HMD 099 (6041) Health manpower development : fellowships R

DHS 001 (4901) Vital and health statistics (1963-73) UNDP—To organize and operate the statistical unit of the Ministry of Public Health, plan and carry out epidemiological surveys, and train personnel. Provided—a statistician (1963-66; 1970-73) and a consultant in 1968.

The work of the health statistics unit was reviewed and proposals were made for improving the collection, dispatch and analysis of statistical data. A revised list of notifiable diseases was brought into use for the collation of morbidity statistics. Cooperation with the national statistical services was maintained, use being made of the country's data processing facilities. Particular attention was paid to hospital statistics and individual records were introduced in all establishments.

Assistance was provided to the epidemiological surveillance centre in connexion with several surveys and with arrangements for the population census.

Instruction was given at schools for health staff and at the National Institute of Statistics. Local training and fellowships were provided for national staff.

¹ *Off. Rec. Wld Hlth Org*, 1974, No. 213, p. 199.

Kenya

SHS 001 (4001) Development of health services (1962-) R UNFPA UNICEF—To develop the health services, strengthen family health activities and train personnel.

HMD 002 (4401) Postbasic nursing education (1967-) R UNICEF—To develop postbasic nursing education at the University of Nairobi, and to train nursing teachers and supervisory staff for nursing services.

HMD 003 (3001) Public health engineering education (1971-) R—To strengthen teaching of public health engineering at the Faculty of Engineering, University of Nairobi; to organize specialized laboratories and carry out research projects; to collect and disseminate documentation on public health engineering in East Africa; and to train teachers in the subject.

HMD 004 (6101) Training centres for health personnel (1971-) R—To develop training centres for health personnel and organize multidisciplinary and integrated courses, including courses for teachers.

HMD 099 (6041) Health manpower development : fellowships R

ESD 001 (1001) Epidemiological services (1971-) R UNDP UNFPA—To develop epidemiological services for surveillance and control of communicable diseases, vector control, and maintenance of vaccination coverage; and to improve the collection and analysis of epidemiological data, develop laboratory services, and train personnel.

SME 001 (1801) Smallpox eradication (1968-) R—To carry out the smallpox eradication programme and epidemiological surveillance of the disease, and maintain vaccination coverage of the population.

PIP 001 (3202) Sectoral study and national programming for community and rural water supply, sewerage and water pollution control, phase II (1974-) FT—To implement the recommendations made during phase I of the project (1971-73), prepare a national sewerage development plan, improve measures for waste water treatment and water pollution control, set standards for developing, operating and maintaining sanitary facilities in urban and rural areas and train technical and administrative staff.

PIP 002 (3301) Master plan for sewerage, storm drainage and groundwater investigations, Nairobi (1971-) UNDP—To carry out groundwater investigations for increasing the Nairobi water supply; to make studies on solid wastes disposal, waste water treatment, organization, legislation and financing; to draw up a master plan for sewerage and drainage in Nairobi and determine the immediate and medium-term needs; and to train personnel.

Lesotho

SHS 001 (4001) Development of health services (1968-) R UNDP UNICEF—To draw up a national health plan; and to develop programmes in environmental health, communicable disease control and family health, improve the quality of public health nursing services, reorganize the laboratory services, improve health statistics, and train personnel.

HMD 099 (6041) Health manpower development : fellowships R

Liberia

SHS 001 (4001) Development of health services (1968-) R UNFPA UNICEF—To implement the national health plan, strengthen health services, particularly the network of health centres, continue the control of communicable diseases and

improve epidemiological surveillance, develop maternal and child health care activities, and train personnel.

HMD 001 (6201) Medical school, Monrovia (1970-) R—To develop the medical school and promote the adoption of integrated instruction; and to train medical teachers.

HMD 099 (6041) Health manpower development : fellowships R

ESD 001 (1001) Epidemiological services (1968-) R UNICEF—To strengthen the control of communicable diseases, improve the epidemiological surveillance system and train personnel.

SME 001 (1801) Smallpox eradication (1968-) R—To carry out the smallpox eradication programme, organize the maintenance phase, and develop epidemiological surveillance.

RAD 001 (4701) Radiological services (1972-) R—To strengthen the radiology and radiotherapy departments of the John F. Kennedy Memorial Centre, develop the national radiology and radiotherapy services, and train staff.

Madagascar

SHS 001 (4001) Development of health services (1971-) R—To develop national health planning, strengthen the health services in the fields of family health (including nutrition and family planning), environmental health and communicable disease control, and train personnel in public health work.

HMD 099 (6041) Health manpower development : fellowships R

PIP 001 (3201) Pre-investment study on water supply and sewerage, Tananarive (1971-) UNDP—To carry out a pre-investment study on water supply and sewerage in Tananarive and the surrounding communities; to draw up a master plan covering 30 years; to draw up feasibility studies for first-stage construction and an immediate programme of short-term measures; and to provide basic and further training to staff.

Malawi

SHS 001 (4001) Development of health services (1970-) R UNICEF—To implement the national health plan, develop maternal and child health services, strengthen the epidemiological surveillance and control of communicable diseases, and train personnel.

SHS 002 (4801) Physical rehabilitation services (1969-) R—To set up a workshop for the production of orthopaedic appliances and to train staff.

HMD 099 (6041) Health manpower development : fellowships R

Mali

SHS 001 (4001) Development of health services (1969-) R UNICEF—To strengthen the network of health services, improve the epidemiological surveillance and control of communicable diseases, develop maternal and child health, nutrition, health education and environmental health activities, and train personnel.

HMD 001 (6201) National School of Medicine (1970; 1974-) R—To train medical officers, pharmacists, dentists and other health personnel.

Mali (continued)

HMD 002 (4401) Nursing education (1964-) R UNICEF—To develop the programmes for training of health personnel, particularly nursing and midwifery personnel, provide inservice training, and train nursing administrators, supervisors and tutors.

HMD 099 (6041) Health manpower development: fellowships R UNDP

SME 001 (1801) Smallpox eradication (1965-) R—To carry out the smallpox eradication programme, organize the maintenance phase, and develop epidemiological surveillance.

PIP 001 (3201) Study of the drainage system in Bamako and of water supply for selected provincial towns (1972-74) UNDP—To plan a drainage system for Bamako and water supplies for the main towns, and to train personnel. Provided—a sanitary engineer (project manager), contractual services, fellowships, supplies and equipment.

Studies for the repair of the Bamako drainage system were completed; sectoral studies were carried out for 36 towns in the interior and sources of funds for water supplies for some of them were found. The project was evaluated by a Government/UNDP/WHO mission.

Mauritania

SHS 001 (4001) Development of health services (1968-) R UNICEF—To develop health services and integrate maternal and child health activities into them, strengthen environmental sanitation and health education work, improve epidemiological surveillance and control of communicable diseases, and train staff.

HMD 001 (4401) Nursing education (1963-) R—To establish a midwifery section at the nursing school in Nouakchott, draw up a basic programme, adapted to conditions in the country, for training midwives to state diploma level, train a national midwife tutor, evaluate and revise the training programmes for state-registered and state-enrolled nurses, and conduct courses for the further training of nursing staff.

HMD 099 (6041) Health manpower development: fellowships R

SME 001 (1801) Smallpox eradication (1968-) R—To carry out a smallpox eradication programme combined with measles and BCG vaccination, organize the maintenance phase and develop epidemiological surveillance.

Mauritius

SHS 001 (4001) Development of health services (1967-) R UNICEF—To strengthen the health services at all levels, revise health legislation, and train personnel.

MCH 001 (5101) Maternal and child health (1971-) UNFPA UNICEF—To strengthen the maternal and child health services and incorporate into them the activities of the Family Planning Association.

NUT 001 (5602) Health and nutrition education unit (1974) UNDP—Under a preparatory mission, 2 consultants (1 from FAO and 1 from WHO for 3 months each) helped to review current activities in nutrition and health education and to formulate a project for nutrition development, to be carried out with UNDP assistance, within the framework of the Government's rural development project.

HMD 001 (4401) Nursing education (1970-) R—To develop programmes for training nurses and midwives and train nursing and midwifery tutors.

HMD 002 (3001) Sanitary engineering education (1973-) UNDP—To train sanitary engineering assistants, health inspectors, and teachers of sanitary engineering, and to strengthen national environmental sanitation services.

HMD 099 (6041) Health manpower development: fellowships R

Niger

SHS 001 (4001) Development of health services (1969-) R FT UNICEF—To develop the infrastructure and work of the health services in accordance with the national health plan; to develop maternal and child health, health education and environmental sanitation activities; to improve the epidemiological surveillance and control of communicable diseases; and to train staff.

HMD 001 (4401) Nursing education (1966-) UNDP—To train various categories of nursing personnel in accordance with the needs and resources of the country, and to develop a system of further training for nursing staff in service.

HMD 099 (6041) Health manpower development: fellowships R

SME 001 (1801) Smallpox eradication (1967-) R—To carry out the smallpox eradication programme, organize the maintenance phase, and develop epidemiological surveillance.

Nigeria

SHS 001 (4001) Development of health services, Federal (1968-) R—To coordinate the activities of the health services, organize antimalaria work and train personnel.

SHS 002 (4003) Development of health services, Western State (1968-) R UNDP UNICEF—To develop a network of health services that will also undertake the control of communicable diseases, develop nursing services, strengthen environmental sanitation services, and train personnel.

SHS 003 (4006) Development of health services, North-Central State (1968-) R UNDP UNICEF; SHS 004 (4013) Mid-West State (1968-) R; SHS 005 (4007) Kano State (1969-) R UNICEF; SHS 006 (4004) Kwara State (1971-) R UNICEF; SHS 007 (4009) Benue-Plateau State (1971-) R UNICEF; SHS 008 (4010) South-Eastern State (1971-) R UNICEF; SHS 009 (4005) North-Western State (1971-) R UNICEF; SHS 010 (4008) North-Eastern State (1971-) R UNICEF; SHS 011 (4012) Rivers State (1973-) R; SHS 012 (4011) East Central State (1973-) R—To plan and strengthen health services, develop and integrate into the health services activities in maternal and child health, environmental sanitation, health education and communicable disease control, and train personnel.

SHS 014 (4101) National health planning, Federal (1973-) UNDP—To formulate the health component of the third national development plan and draw up the 15-year health plan.

HED 001 (4501) Health education (1974) UNDP—Fellowships were awarded under this project, for which staff were provided between 1962 and 1973. The work done during that period is described in the Annual Report for 1973.¹

HMD 001 (6206) Medical school, Zaria (1967-) R—To develop the teaching of public health, microbiology and psychiatry at the medical school, and train medical teachers.

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, p. 201.

HMD 002 (5403) Mental health, University of Ibadan (1968-) R—To develop the teaching of clinical psychology at the University of Ibadan medical school, organize the teaching of mental health and train national teachers; and to provide instruction in mental health to medical officers and other health personnel.

HMD 004 (6211) Medical school, Nsuka (1974-) R—To develop the medical school, and to train physicians adapted to local conditions and capable of providing preventive and curative medical care so as to achieve total coverage of the urban and rural population.

HMD 006 (3001) Public health engineering education (1972-) R—To develop public health engineering education at the civil engineering faculties of the Universities of Lagos and Zaria, organize applied research, provide training in environmental health to health personnel, and train teachers of public health engineering.

HMD 007 (4701) School of radiography (1968-) R—To develop the federal school of radiography, and train technicians in radiography and radiotherapy and in the maintenance and repair of X-ray and electromedical equipment.

HMD 008 (5101) Gbaja family health nursing project (1971-73) UNFPA—To determine which activities carried out by medical officers could be entrusted to nurses. Provided—grants in 1971, 1972 and 1973.

Family planning activities were fully integrated with clinical activities and 95.4% of examinations are now carried out exclusively by nurses, with encouraging results. The Institute of Child Health will continue to supervise and develop maternal and child health work at the Gbaja Road health centre, Lagos.

HMD 099 (6041) Health manpower development: fellowships R

ESD 001 (1001) Epidemiological services, Federal (1968-) UNDP—To develop the epidemiological service at federal level, improve epidemiological surveillance, develop health laboratory work, organize vaccine production, and train the necessary staff.

ESD 002 (1003) Epidemiological services, Western State (1968-) R UNICEF; **ESD 003 (1006) North-Central, Kano and North-Eastern States (1968-)** R UNICEF; **ESD 004 (1013) Mid-West State (1968-)** UNDP UNICEF—To develop activities for the control of communicable diseases, strengthen health laboratory services, improve the epidemiological surveillance system, and train staff.

SME 001 (1801) Smallpox eradication (1968-) R—To carry out the smallpox eradication programme, organize the maintenance phase, and develop epidemiological surveillance.

BSM 002 (3008) Health component in the South Lake Chad irrigation project feasibility study (1972-73) UNDP/FAO—To assist the Government in conducting surveys on waterborne parasitic diseases, to evaluate the present health situation and the impact which the development project activities may have on the prevalence of these diseases, to plan measures for disease control and to advise on the improvement of environmental sanitation in the project area, including the provision of safe domestic water. Provided—an epidemiologist, a parasitologist and 2 sanitary engineers.

At the request of FAO, a multidisciplinary WHO mission made studies of the health situation from October 1972 to March 1973. It was confirmed that urinary schistosomiasis and malaria are major health problems in the area, and it was considered that the development activities would increase transmission intensity of both these diseases. Specific control measures were proposed.

Measures for strengthening of health services and improving water supplies were suggested. In October and November 1973 follow-up studies were undertaken on malaria vectors, the sensitivity of local strains to fenitrothion and other insecticides, and infectivity rates. Longitudinal studies of schistosomiasis were made in the population of 3 villages, primarily to measure the incidence and intensity of infection. Additional studies included investigations on the occurrence of *Schistosoma mansoni*, on the possible presence of *S. intercalatum*, and on animal schistosomiasis.

Réunion

HMD 099 (6041) Health manpower development: fellowships R

Rwanda

SHS 001 (4001) Development of health services (1969-) R UNICEF—To develop health services, integrate into them activities in maternal and child health, nutrition, health education and environmental sanitation, and train personnel.

HMD 001 (6201) Medical school, Butaré (1967-) R UNDP—To develop medical education at the National University of Rwanda, introduce public health in the training of medical and other health staff, and train national teachers.

HMD 099 (6041) Health manpower development: fellowships R

ESD 001 (1001) Epidemiological services (1972-) R UNDP VS UNICEF—To strengthen the epidemiological service, carry out programmes for the control of communicable diseases, including tuberculosis and typhus; to maintain smallpox surveillance, strengthen the vital and health statistics service, and train personnel.

PIP 001 (3201) Pilot studies on water supply, Kigali and Butaré (1972-) UNDP—To make pre-investment studies and draw up master plans for water supplies for Kigali and Butaré.

Senegal

SHS 001 (4001) Development of health services (1968-) R UNICEF—To develop a network of integrated health services; to carry out maternal and child health and nutrition work in the Fatick area and plan its extension; to control endemic diseases, including malaria and tuberculosis; and to train personnel.

HMD 001 (5501) Institute of Odontology and Stomatology, University of Dakar (1967; 1970-) R—To develop the teaching at the Institute, and to train dentists, dental auxiliaries, and teachers.

HMD 099 (6041) Health manpower development: fellowships R

SME 001 (1801) Smallpox eradication (1970-) R—To carry out the smallpox eradication programme, organize the maintenance phase, and develop epidemiological surveillance.

PIP 001 (3201) Phase I: Master plans for water supply and sewerage for Dakar and the surrounding area (1966-73) UNDP—To draw up a phased 30-year master plan for water supply in Dakar and the surrounding area, determine the administrative, legal and financial conditions necessary for implementation of the programme, and train personnel. **Phase II: Study of groundwater resources on the north coast and technical assistance for wastes disposal and water supply (1973-)** UNDP—To continue groundwater investigations in the coastal area from Dakar to St Louis; to finalize engineering plans for first-stage implementation in Dakar; to carry out a sector survey in secondary centres; and to study the possibility of recharging the aquifer under the city with treated waste water.

Seychelles

HMD 099 (6041) Health manpower development : fellowships R

Sierra Leone

SHS 001 (4001) Development of health services (1968-) R UNICEF—To strengthen health services, especially in rural areas, develop activities in maternal and child health, nursing, health education and environmental sanitation, and train personnel.

HMD 001 (6201) University Centre for Health Sciences, Freetown (1970; 1974-) R—To develop the Centre and train national staff for teaching and administration.

HMD 002 (4401) Nursing education (1961-) R—To review nursing needs and resources; to draw up short-term and long-term plans for a nursing education programme, including nursing, midwifery and public health, adapted to the conditions and needs of the country; and to improve the administration of the nursing services.

HMD 099 (6041) Health manpower development : fellowships R UNDP

ESD 001 (1001) Epidemiological services (1968-) R UNDP—To develop epidemiological services, eliminate residual foci of yaws, strengthen the control of tuberculosis, organize national health laboratory services, and train personnel.

SME 001 (1801) Smallpox eradication (1969-) R—To carry out the smallpox eradication programme, organize the maintenance phase, and develop epidemiological surveillance.

Swaziland

SHS 001 (4001) Development of health services (1969-) R UNFPA UNICEF—To develop health services, especially in rural areas; to strengthen maternal and child health, including family planning activities; to strengthen epidemiological surveillance and control of communicable diseases; to develop environmental sanitation work; and to train personnel.

HMD 099 (6041) Health manpower development : fellowships R

Togo

SHS 001 (4001) Development of health services (1968-) R UNDP UNICEF—To develop, by stages, a network of health services; to strengthen activities for the control of communicable diseases, including malaria; to carry out a sanitation programme; and to train personnel.

HMD 001 (6201) Medical school, Lomé (1972-) R—To develop training in health sciences at the medical school.

HMD 002 (6101) Training school for medical auxiliaries, Sokodé (1974-) R—To develop teaching at the school.

HMD 099 (6041) Health manpower development : fellowships R

ESD 001 (1001) Epidemiological services (1968-) R UNDP UNICEF—To develop the epidemiological services and health laboratory services, continue the control of communicable diseases, and train personnel.

SME 001 (1801) Smallpox eradication (1968-) R—To carry out the smallpox eradication programme, organize the maintenance phase and develop epidemiological surveillance.

Uganda

SHS 001 (4001) Development of health services (1968-) R UNDP UNICEF—To strengthen the health services at all levels in accordance with the development plan, develop work in the fields of maternal and child health, nutrition, environmental sanitation and control of communicable diseases, including leprosy, incorporate health education into all health programmes, and train personnel.

HMD 099 (6041) Health manpower development : fellowships R

ESD 001 (1001) Epidemiological services (1968-) R UNDP UNICEF—To strengthen the epidemiological and health statistical service, organize epidemiological surveillance and control of communicable diseases, develop laboratory and public health veterinary services, and train staff.

United Republic of Cameroon

SHS 001 (4001) Development of health services (1968-) R UNDP UNFPA UNICEF—To develop health services by stages; to organize 6 public health demonstration areas and extend health activities from these areas; to control communicable diseases, including malaria, and to train personnel.

HMD 001 (6201) University Centre for Health Sciences, Yaoundé (1966-) UNDP—To develop the University Centre, implement an integrated multidisciplinary programme, train together members of the health team, including physicians, give further training to staff already in service, and train teachers.

HMD 099 (6041) Health manpower development : fellowships R UNDP

United Republic of Tanzania

SHS 002 (4101) National health planning (July 1973–May 1974) R—A consultant assisted in making an inventory of health problems and resources and in formulating a national health plan within the framework of the socioeconomic development plan.

HMD 001 (6201) Medical school, Dar es Salaam (1965-) UNDP UNFPA—To adapt the curricula of the medical school to local needs, strengthen undergraduate and postgraduate teaching, and train national teachers.

HMD 002 (4401) Nursing education (1970-) R—To develop nursing education, draw up and implement staff training programmes, train teachers, and incorporate public health principles into nursing and midwifery training.

HMD 003 (6101) Centres for training medical auxiliaries (1972-) R—To adapt and implement training programmes for medical auxiliaries.

HMD 099 (6041) Health manpower development : fellowships R

ESD 001 (1001) Epidemiological services (1969-) R UNICEF—To organize epidemiological surveillance, strengthen the control of communicable eye diseases, tuberculosis, schistosomiasis and other endemic diseases, develop vital and health statistics services, strengthen laboratory services, and train personnel.

BSM 001 (3201) Water supplies for small communities (1972-) R—To strengthen the sanitation services and plan and implement environmental sanitation activities, including water supplies and waste disposal facilities, especially for small communities.

Upper Volta

SHS 001 (4001) Development of health services (1968-) R
UNDP UNICEF—To develop maternal and child health care, integrate communicable disease control activities into the work of the health services, strengthen environmental sanitation activities, and train staff.

HMD 001 (4401) Teaching of health sciences (1968-) R
UNDP UNICEF—To train various categories of health personnel in accordance with the development of the health services, provide further training to health personnel in service, plan nursing and obstetrical services, and train national teachers.

HMD 099 (6041) Health manpower development : fellowships R

ESD 001 (1001) Epidemiological services (1974-) R—To organize epidemiological services, strengthen epidemiological surveillance and control of communicable diseases, and train staff.

SME 001 (1801) Smallpox eradication (1967-) R—To carry out the smallpox eradication programme, organize the maintenance phase, and develop epidemiological surveillance.

MBD 001 (1201) Tuberculosis control (1969-73) R—To protect the population against tuberculosis by BCG vaccination of the age group 0-15 years, detect and treat cases of tuberculosis, and train personnel in tuberculosis control methods and techniques. Provided—a medical officer (1969-73) and a nurse (1969-72), and supplies, including drugs.

A tuberculosis centre was set up in Ouagadougou and staff were trained in diagnosis and ambulatory treatment. There were 2662 patients registered, and 728 under treatment.

The BCG vaccination campaign, which started in 1967, was assisted by WHO as from 1969. It was concluded in 9 out of 12 sectors by the end of 1973 and was continuing in the remaining 3 when WHO assistance ended. Since the beginning of the campaign 2 256 000 vaccinations have been performed; coverage was between 51% and 94%, depending on the sector. Additional vaccinations have been performed in inadequately covered districts. Inservice training was given in case-detection, treatment and vaccination techniques, in addition to which the WHO nurse helped with nursing education.

Tuberculosis control is now incorporated in the epidemiological services project ESD 001 (1001).

Zaire

SHS 001 (4001) Development of health services (1968-) R—To strengthen integrated health services, develop a long-term sanitation programme, study the epidemiology of malaria and organize malaria control measures, strengthen maternal and child health activities, and train personnel.

HMD 001 (6201) Training in health sciences (1960-) R—To develop training in health sciences at the National University of Zaire, and provide inservice and further training to health personnel.

HMD 002 (4401) Nursing education (1968-) R—To develop nursing and midwifery services, and train nurses, midwives, and nursing and midwifery tutors.

HMD 099 (6041) Health manpower development : fellowships R

ESD 001 (1001) Epidemiological services (1968-) R—To improve epidemiological services, organize laboratory services, and train personnel.

SME 001 (1801) Smallpox eradication (1967-) R—To maintain immunity of the population to smallpox and tuberculosis at an adequate level, improve the system of epidemiological surveillance of smallpox, and train staff.

Zambia

SHS 001 (4001) Development of health services (1969-) R
UNDP UNICEF—To strengthen integrated health services, improve the control of communicable diseases and maternal and child health, health education and environmental sanitation work, develop laboratory services, and train personnel.

HMD 001 (6201) Medical school, Lusaka (1965-66; 1968-) R—To develop training at the medical school, provide training in public health to medical students, and train national teachers.

HMD 002 (4402) Postbasic nursing education (1973-) R—To establish a department of nursing at the University of Lusaka, train nursing service administrators and nurse educators, and carry out research on nursing.

HMD 099 (6041) Health manpower development : fellowships R

Intercountry Programmes (AFRO)

SHS 001 (4110) National health planning (1973-) R—To assist countries in formulating, implementing and evaluating health plans.

SHS 004 (4801) Medical rehabilitation (1972; 1974-) R—To assist countries in strengthening medical rehabilitation activities.

SHS 005 (4302) Consultant services in hospital administration (1972-) R—To assist in improving hospital administration in the countries of the Region.

SHS 007 (4303) Seminar on the Place of Hospitals in Public Health Services and their Role in African Communities, Brazzaville (5-9 Aug. 1974) R—To make a critical analysis of the organization and operating costs of hospitals in the Region, determine the place of hospitals in the health services and their role in the community, and define their place and role within a new health service strategy. There were 23 participants (including 2 medical students) from 23 countries of the Region, and 6 WHO field staff. Provided—a consultant and the cost of attendance of participants.

SHS 008 (4109) Seminar on Methods of Increasing Health Service Coverage in Rural Areas, Brazzaville (1-5 July 1974) R—To study the coverage of health services in rural areas, identify problems, and formulate recommendations concerning ways of extending health coverage to the entire rural population. The Seminar had 25 participants (including 2 medical students) from 21 countries of the Region. An observer from the United States Peace Corps and 7 WHO staff members also attended. Provided—a consultant, the cost of attendance of the participants, and supplies and equipment.

SHS 010 (4105) Consultant services in economic development projects (1971-) R—To study the health components and assess the public health implications of socioeconomic development projects and assist in preparing and implementing such projects.

SHS 012 (4202) Consultant services in health laboratories (1971-) R—To assist governments in developing and strengthening health laboratory services and blood transfusion centres.

Intercountry Programmes (AFRO) (*continued*)

MCH 001 (5102) Maternal and child health (1972–) UNFPA—To train nurses and midwives in disciplines relating to maternal and child health and human reproduction, and to assist countries in incorporating family planning in maternal and child health activities.

NUT 001 (5601) Joint FAO/WHO/OAU Regional Food and Nutrition Commission for Africa (1964–) R—To assemble data on nutrition problems, analyse studies carried out in this field in Africa, and prepare and distribute bulletins and nutrition briefs.

NUT 002 (5602) Consultant services in nutrition (1965–) R—To assist the countries of the Region in developing nutrition work within the framework of the health services, carrying out nutrition surveys, and training personnel.

HED 001 (4501) Consultant services in health education (1971–) R UNFPA—To assist in strengthening health education services, particularly in the field of school health education.

HMD 001 (4104) Pilot studies on the needs in health personnel (1970; 1972; 1974–) R—To undertake pilot studies on the existing situation and on the additional needs in health personnel.

HMD 002 (6301) Study Group on the Development of Postgraduate Medical Education, Brazzaville (3-7 Dec. 1973) R—To formulate educational objectives for postgraduate medical training programmes in the African Region, define the minimum level of such programmes, propose measures for implementing them, determine criteria for identifying the needs in specialists and teachers, and study the possibilities for postgraduate training in the Region. The Group, which was comprised of 5 temporary advisers and a consultant, considered the training of teachers and investigators in basic sciences (human biology) and made recommendations on ways of organizing instruction in basic sciences adapted to the Region's needs and of interesting teachers and students in such instruction.

HMD 004 (6210) Consultant services in educational planning for health sciences (Sept.-Nov. 1974) R—A consultant assisted the medical school, Dar es Salaam, in establishing a B.Sc. programme for the training of pharmacists.

HMD 007 (6204) Faculty of Medicine, Makerere University, Kampala, Uganda (1968–) R UNICEF—To assist in developing the Faculty of Medicine.

HMD 008 (6205) Schools of medicine and other teaching institutions in the health sciences (1968–) R—To study the needs in staff and equipment for teaching institutions and provide educational material and equipment.

HMD 010 (4401) Centre for postbasic nursing education, Ibadan, Nigeria (1962–74) R UNICEF—To organize and operate, at the University of Ibadan, a nursing education centre providing a 3-year B.Sc. nursing programme that would enable graduates to participate in health planning, direct a nursing service or school, draw up curricula, and encourage research in nursing. Provided—10 nurse educators (assigned successively), consultants, fellowships, and supplies and equipment.

Needs and resources were studied, after which training programmes were established and approved by the University and the Nursing Council of Nigeria. The department of nursing was recognized and its staff were given university status. Instruction began in 1965 and the first diplomas were awarded in 1968. By the end of the 1974 academic year 87 students from Nigeria and other African countries where English is spoken had qualified.

A Nigerian nurse was appointed head of the department in 1970, and the University took over administrative and financial responsibility for it in 1971.

HMD 011 (4402) Centre for postbasic nursing education, Dakar (1967–) R UNICEF; **HMD 012 (4404) Yaoundé** (1972–) R—To organize and operate the centres, establish curricula in accordance with the needs of the Region and modern concepts of teaching methodology, administration and team work, and encourage research in nursing and the application of its results to conditions in Africa.

HMD 013 (4406) Consultant services in nursing (1973–) R—To provide consultant services for the improvement of nursing administration, training programmes and research.

HMD 014 (3006) Centres for public health engineering research, demonstration and training (1972–) R—To establish public health engineering centres, develop training programmes, and promote the development and application of methods suited to conditions in the Region.

HMD 016 (3204) Training centres for water and sewerage works operators (1974–) R—To assist in training water and sewerage works operators for the countries of the Region.

HMD 017 (4503) Centres for training in health education (1972–) R—To assist in developing undergraduate and postgraduate training in health education.

HMD 018 (4301) Centres for training technicians in the repair and maintenance of medical equipment (1970–) R—To train technicians for the installation, maintenance and repair of X-ray apparatus and other electromedical equipment.

HMD 019 (5101) International Children's Centre courses (1968–) R—To enable physicians and other health personnel to attend courses organized by the Centre.

HMD 022 (6401) Training centre for health service personnel (English language), Lagos (1961–) R; **HMD 023 (6402)** (French language), Lomé (1962–) R—To organize, for health personnel, special courses on public health measures and anti-malaria techniques.

HMD 025 (6405) Departments, institutes and schools of public health (1971–) R—To assist in establishing and developing departments, institutes and schools of public health in the Region.

HMD 026 (6203) Staff exchanges between medical schools of the African Region (1968–) R—To promote the interchange of views and experience among teachers in medical schools.

HMD 028 (6206) Regional teacher training centres (1971–) R—To train health science teachers in modern educational techniques.

During the period under review 2 consultants, costs of attendance of 24 participants, and supplies were provided for a workshop on teaching methods held in Kampala, Uganda.

HMD 099 (6041 and 6042) Health manpower development: fellowships R UNDP

ESD 001 (1001) Epidemiological services (1968–) R—To study epidemiological problems in countries of the Region, assist with measures for the control of communicable diseases, and develop evaluation systems relevant to the measures taken.

ESD 002 (2901) Epidemiological surveillance centre, Nairobi (1960–) R; **ESD 003 (2902) Abidjan** (1970–) R; **ESD 004 (2903) Brazzaville** (1974–) R—To participate in the collection, analysis and evaluation of statistical and epidemiological data,

determine priorities and recommend measures for control of epidemics and major endemic diseases, standardize prevention, control and epidemiological surveillance procedures, distribute health information to Member countries, and help to train personnel.

MPD 001 (2001) Training of public health personnel in malaria (1964–) R—To enable senior personnel to study the methods employed in the Region for the development of health services and the control of malaria and other communicable diseases.

MPD 002 (2002), MPD 003 (2003) and MPD 004 (2004) Consultant services in malaria, West, Central and East Africa (1967–) R—To provide for the assessment of the malaria situation in the countries of the Region, and to assist in the planning, implementation and evaluation of antimalaria activities feasible under local conditions.

MPD 005 (2101) Consultant services in schistosomiasis (1967–71; 1973–) R—To study the epidemiological pattern of schistosomiasis and develop control methods.

MPD 006 (2202) Onchocerciasis control, Volta River basin area (1971–) ON UNDP (FAO) (IBRD) (Bilateral assistance) —To interrupt the transmission of onchocerciasis through aerial larviciding with a view to eradicating the disease; to treat persons infected with onchocerciasis in the project area; to carry out applied research programmes guaranteeing a high level of effectiveness of operations; to train staff needed for implementation of the programme and subsequent maintenance operations; and to ensure socioeconomic development of fertile areas freed from the disease.

MPD 008 (2301) Consultant services in trypanosomiasis (1969–70; 1972–) R—To detect foci of trypanosomiasis and assess their extent, study the ecology of the vector and the transmission of the disease, and make recommendations on control measures.

SME 001 (1801) Smallpox eradication (1965–) R VS—To assist governments in planning and implementing mass vaccination campaigns, carrying out epidemiological surveys in areas where cases of smallpox have been reported, and evaluating eradication programmes in progress; and to provide equipment and vaccine.

BAC 001 (1401) Cholera control (1971–) R VC—To assist countries of the Region in organizing national and regional cholera control programmes; to supplement national stocks of drugs and biological preparations in emergencies; and to train staff.

BAC 002 (1501) Plague control (1968–) R—To review the epidemiological situation in the Region as regards plague and assist in organizing national and regional control programmes.

BAC 003 (1601) Cerebrospinal meningitis control (1960–) R—To assist governments in controlling epidemics of cerebrospinal meningitis.

VDT 001 (1101) Consultant services in treponematoses (1965–73) UNDP—To assist in assessing the public health importance

of treponematoses and evaluating the results of mass campaigns; to carry out seroepidemiological studies by means of random sampling surveys, plan control programmes and train personnel. Provided—an epidemiologist, an administrator and a laboratory technician, consultants, and supplies and equipment.

Operations started in 1965 in the Western and Mid-West States of Nigeria, where clinical examinations followed by 1360 serological examinations were performed during epidemiological sampling covering 50 localities. These showed that yaws transmission remained active and that certain virulent foci persisted, which indicated that it had been difficult to maintain the results of the mass campaign previously carried out.

Subsequently, the WHO team spent 2 years in Niger and Upper Volta conducting a clinical and serological survey in these countries. Preliminary results showed that the prevalence of treponematoses was low, which indicated that the penicillin treatment carried out for a considerable time by the static and mobile health units had been effective. Prevalence in the age-group 5–13 years among the sedentary population was found to be slightly higher (1.2% of clinical signs) than in the same age-group of the nomadic population (1.1%). It was also shown that in Niger and Upper Volta endemic treponematoses were of greater significance than venereal syphilis.

In 1971 a consultant evaluated the situation in Mali, Mauritania and Senegal, and in 1973 another consultant evaluated the results of the mass yaws campaign carried out in Ghana and studied treponematoses prevalence in Rwanda.

CAN 001 (8101) Consultant services in cancer (1974–) R—To assist countries in setting up effective services for the prevention and treatment of cancer and in training the necessary personnel.

DNH 001 (5501) Consultant services in dental health (1974–) R—To promote the development of dental health services in countries of the Region.

SQP 001 (7401) Consultant services in prophylactic and therapeutic substances (1969–) R—To assess the situation with regard to the quality control of pharmaceuticals in the Region, make recommendations concerning the organization of regional control laboratories, and meet requests of governments for advice on drug manufacture and distribution.

BSM 001 (3202) Consultant services in water supply and sewerage (1969–) R—To assist in planning, organizing, implementing and assessing water supply and sewerage programmes.

HWP 001 (5201) Consultant services in occupational health (1971–) R—To assist countries of the Region in developing medicosocial services for workers and their families and in training personnel.

HLT 002 (6501) Regional library (1974–) R—To assist in establishing a regional library specialized in education, biomedical research and staff training.

HLE 001 (4107) Consultant services in health legislation (1971–) R—To assist countries in drafting health legislation and regulations.

REGION OF THE AMERICAS

Argentina

SHS 001 (3100) Health services (1966-) R PR—To set up a personnel structure suited to the aims of the health sector, improve the financing of the sector, and prepare a health code consistent with present needs.

SHS 002 (3200) Nursing (1973-) PR—To develop inservice training centres in order to improve the quality of nursing care.

SHS 004 (4803) Latin American Centre for Medical Administration (1967-) R PR PH PG: Government of Argentina—To develop programmes of research on problems of medical and hospital administration and to train personnel in that field.

SHS 005 (4804) Hospital maintenance (1973-) UNDP PR—To establish a nationwide hospital maintenance system.

MCH 003 (4901, formerly 4100) Maternal and child health (1973-) R—To extend maternal and child health services, particularly to rural areas.

MCH 004 (4902, formerly 4101) Survey of nursing and midwifery (1974-) R PR—To improve nursing and midwifery services, particularly in the 17 relatively less-developed provinces, and train the necessary personnel.

NUT 002 (4203) Nutrition studies (1974-) UNDP—To develop nutrition research, education and services.

HMD 001 (6100) School of public health (1958-) R—To strengthen instruction, research and extension work at the University of Buenos Aires School of Public Health.

HMD 002 (6200) Medical education (1958-) R—To improve the teaching at the schools of medicine.

HMD 003 (6400) Sanitary engineering education (1960-77) PR—To intensify the national programme of education, research and technical information in sanitary engineering.

ESD 001 (0100) Communicable disease control (1969-70; 1972-78) R—To develop communicable disease control programmes.

MPD 001 (0200) Malaria eradication programme (1951-) PR

MBD 001 (0400) Tuberculosis control (1973-77) R—To improve tuberculosis control activities and integrate them into the medical care programmes of the provincial health services.

VPH 001 (6500) Veterinary medical education (1972-) PR—To improve the basic training of veterinarians in preventive medicine and public health, strengthen teaching methods and train instructors.

MNH 001 (4300) Mental health (1966-) PR—To implement a national programme in social psychiatry, plan and implement mental health work, train personnel, and carry out research.

BSM 001 (2100) Engineering and environmental sciences (1967-) PR—To strengthen the organization of environmental sani-

tation services and programmes at the federal and provincial levels and to train professional and technical personnel.

BSM 002 (2200) Water supplies (1960-) R—To construct and improve the administration of water and sewerage services and to train personnel.

CEP 001 (4500) Radiation protection (1967-77) PR—To develop a national radiation protection programme, including a census of all radiological equipment and certification of its safe functioning and provision of a radiation monitoring service; and to train personnel.

HWP 001 (4602) Industrial safety and hygiene (1973-)—To implement measures for reducing work accidents and occupational diseases.

DHS 002 (3504) Centre for computer applications in health programmes (1968-) UNDP—To develop the medical computing centre at the Faculty of Medical Sciences, University of Buenos Aires, which provides computer services in connexion with health planning and programming and carries out training and research.

DHS 003 (6700) Training of statistical personnel (1965-77) PR—To train statistical personnel for work in local and regional health statistics offices, and in departments of statistics and of medical records in hospitals and health centres.

Bahamas

SHS 001 (3110) Health services (1972-) R PG: Government of the Bahamas—To improve and extend the health services, integrating the preventive and curative services.

SHS 002 (3200) Nursing services (1974-) PR—To improve nursing services by increasing the part taken by nursing staff in the administrative reform of the Ministry of Health, defining the duties of the various categories of nursing personnel, and carrying out training programmes.

SHS 005 (4810) Hospital administration (1973-76) UNDP—To plan and organize the delivery of personal health services through 2 community health oriented hospital complexes (Rand Memorial and Princess Margaret-Sandilands) and other health facilities.

BSM 001 (2104) Environmental services (1974-75) UNDP—To improve the management of environmental services, including those for pollution control and disposal of solid wastes, in the newly established Department of Environmental Services in the Ministry of Health.

Barbados

SHS 001 (3100) Health services (1968-) R PR—To improve, expand and integrate the curative and preventive services, and to prepare, implement and continuously evaluate the overall health plan.

SHS 002 (3200) District nursing services (1973-) PR—To develop an integrated public health nursing service that will include a school health programme and a domiciliary nursing service.

SHS 003 (4801) Hospital administration (1965-) UNDP—To develop the Queen Elizabeth Hospital as the principal medical centre of the country and coordinate its activities with those of other hospitals.

SHS 004 (3600) Management of health services (1974-) PR—To improve the administrative methods and practices in the Ministry of Health.

HMD 001 (6600) Dental education (1972-) R—To train staff for a comprehensive programme of dental care for school-children and pregnant women and for indigent persons.

VPH 002 (0702) Animal and human health (1974-78) UNDP—To develop an organization for the prevention, control and eventual elimination of zoonotic and other animal diseases.

VBC 001 (2300) Aedes aegypti eradication (1969-73) R—To eradicate *A. aegypti* in order to protect the population from yellow fever and dengue haemorrhagic fever. Provided—a consultant (1973), technical advisory services from staff of intercountry and zone projects, a fellowship for the chief of the campaign's field operations, supplies and equipment, and an annual grant.

The first eradication campaign in Barbados began in 1955, when the overall *A. aegypti* index was 61.1% and infestation was widespread. By 1957 the index had dropped to 1% and remained near that figure in spite of the development of mosquito resistance to DDT and dieldrin. At the end of 1965 fenitrothion was introduced for coverage of a limited area comprising Bridgetown, the Seawall Airport, and the seaport. In 1968 the Government decided to begin an islandwide eradication campaign.

During the first cycle of the expanded campaign (Jan.-March 1969), 64 879 houses out of a total of 72 551 were inspected and treated, and 569 were found positive. In 1972, 2 technical officers made an assessment of the campaign and produced a comprehensive report. In 1973, staff of the Organization collaborated in clean-up activities and in obtaining the active participation of the community in attack operations. The Government invested an average of EC \$220 000 a year in the campaign.

At the end of the project, following the twenty-fifth insecticide spraying cycle, the *A. aegypti* index was found to be 0.25%. This indicates that the degree of control is adequate to keep the index below 1%, although eradication of the mosquito was not achieved.

BSM 001 (2100) Engineering and environmental sciences (1970-) PR PG: Government of Barbados—To plan and implement environmental health programmes.

SES 001 (2201) Water supply and sewerage services administration (1971-) PR PW—To improve the administration and management of water supply and sewerage services.

3300 Laboratory services (1970-73) PR—To expand the laboratory services and establish a regular 2-year course to train intermediate-level laboratory technicians. Provided—a consultant, advisory services by the PAHO/WHO country representative, 3 fellowships, and audiovisual equipment.

In 1970 the senior laboratory technician of the Queen Elizabeth Hospital, who was to serve as senior instructor for the local course, trained for 6 months in the United Kingdom. In 1971, 2 technicians attended a short course in venereal disease serology and fluorescent antibody techniques. The 2 government clinical laboratories, at the Enmore health centre and the Queen Elizabeth Hospital, were placed under the direction of the Hospital's senior pathologist. In 1972, training was provided for 3 laboratory technicians and 1 laboratory assistant.

The 2-year course in laboratory technology was established in 1971 and reviewed in 1972; 2 technicians graduated in the first examination (June) and one in the second (December).

Further assistance related to laboratory services will be given under projects Barbados SHS 001 (3100) and SHS 003 (4801).

Belize

SHS 001 (3100) Health services (1962-77) R PR—To improve the health services and extend their coverage, giving particular attention to communicable disease control and environmental sanitation.

HMD 001 (6400) Sanitary engineering education (1966-77) PR—To develop short courses in sanitary engineering and environmental sanitation subjects.

MPD 001 (0200) Malaria eradication programme (1956-) PR UNICEF

VBC 001 (2300) Aedes aegypti eradication (1972-) PR

BSM 001 (2100) Engineering and environmental sciences (1971-) UNDP PR—To develop a national programme of environmental sanitation, including the provision of water supply and sewerage services to urban and rural communities.

Bolivia

SHS 001 (3100) Health services (1955-77) R PR UNICEF—To improve and extend the health services in urban and rural areas and train health personnel.

SHS 002 (3104) Health services, Cochabamba and Tarija (1966-73) UNDP PR UNICEF—To develop the health services and improve basic sanitation services in Cochabamba, Tarija and some other departments. Provided—medical officers, sanitary engineers and consultants, as well as fellowships and grants.

Work began in the Departments of Cochabamba and Tarija and was later extended to Santa Cruz, Chuquisaca, Beni, Potosí and La Paz; eventually the project covered 75% of the country.

Rural sanitation work included the construction of 563 wells and 4 water supply systems to serve over 56 000 people; 6823 latrines and 470 septic tanks were installed. As regards rural water supplies, 70% of the target figure was reached; for sewage disposal it was exceeded (134%). A national revolving fund for basic sanitation was established in the Ministry of Public Health with funds from a grant from the Organization.

Supervisory and advisory services were provided to hospitals in Cochabamba and Tarija. A BCG and smallpox vaccination campaign was carried out in Cochabamba, and in Tarija the tuberculosis control programme was continued.

Two courses, 1 for 20 technicians and 1 for 32 technicians, were given in Tarija; in Cochabamba a course was given for 23 technicians; and in La Paz 40 sanitation inspectors were trained. These activities will be continued under projects Bolivia SHS 001 (3100) and BSM 001 (2100).

SHS 003 (4800) Medical care services (1972-) R PR—To improve the administration of the medical care services, restructure the main hospitals, and train personnel in hospital administration.

MCH 002 (4900, formerly 4100) Maternal and child health (1972-) PR PG: USAID—To develop comprehensive health care programmes for mothers and children in order to reduce maternal and child mortality and morbidity rates.

Bolivia (continued)

NUT 001 (4200) Nutrition (1971-) PR—To improve levels of nutrition, particularly among mothers, children and hospital patients.

NUT 002 (4201) Control of endemic goitre (1973-74) PH—To administer iodized oil, orally or intramuscularly, in 4 towns with a high prevalence of endemic goitre, in order to test the efficacy of both methods as an interim measure until iodized salt is readily available.

NUT 003 (4202) Effects of iodine deficiency and of its correction on the mental development of children (1973-) PG: Medical Research Council, USA—To assess mental performance, nutritional status, and thyroid function in schoolchildren before and after iodine supplementation.

HMD 001 (6200) Medical education (1968-78) R—To revise the programme of the 3 medical schools and incorporate concepts of social and preventive medicine into the curricula.

HMD 002 (6400) Sanitary engineering education (1964-) PR—To improve the university training of sanitary engineers and train practising engineers and auxiliary staff in environmental sanitation subjects.

HMD 003 (6600) Dental education (1968-78) R—To improve the teaching of dentistry in the faculties of health sciences that are being established and adapt the curricula to the needs of the country.

HMD 004 (6300) Nursing education (1973-78) R—To improve the training of nursing personnel by strengthening curricula and teaching methods and training nursing teachers.

HMD 099 (3102) Fellowships R

ESD 001 (0100) Epidemiology (1968-) UNDP PR—To carry out epidemiological studies, and establish and develop programmes for the surveillance, control and eradication of communicable diseases.

MPD 001 (0200) Malaria eradication programme (1957-) PR UNICEF

SME 001 (0300) Smallpox eradication (1962-) R—To keep the country free from smallpox through epidemiological surveillance and maintenance vaccination.

MBD 001 (0400) Tuberculosis control (1963-) PR—To implement a national tuberculosis control programme, integrated into the general health services.

VPH 001 (0701) Zoonoses control (1971-) R—To implement demonstration programmes for the control of rabies and other zoonoses of public health importance, with a view to developing work methods adapted to the country's requirements and training personnel.

VPH 002 (6500) Veterinary medical education (1967-) R—To improve the teaching of veterinary medicine, and particularly the preventive and social aspects, at the University of Santa Cruz de la Sierra.

VBC 001 (0901) Typhus control (1968-74) R—To carry out a pilot control programme.

ISB 001 (3301) Production of immunoglobulin against haemorrhagic fever (1973-74) PG: US Army Medical Research and Development Command—To prepare an immunoglobulin against Bolivian haemorrhagic fever. Provided—consultants, a temporary adviser and supplies and equipment.

Two hundred and twenty units of plasma were collected by the plasmapheresis technique from 15 immune donors. The plasma was fractionated into 1400 ml of gammaglobulin, one half of which was retained in United States laboratories and one half returned to Bolivia. The dosage for exposure prophylaxis was determined by studies on rhesus monkeys experimentally infected with Machupo virus.

This biological will facilitate research on vaccine production in United States laboratories and will be used to protect workers in the field in Bolivia.

BSM 001 (2100) Engineering and environmental sciences (1969-) R PR—To improve the levels of environmental health and sanitation.

BSM 002 (2200) Water supply and sewerage (1960-70; 1972-77) R—To provide water supplies and sewerage services to urban and rural communities.

HWP 001 (4600) Occupational health (1971-) UNDP—To expand the industrial hygiene and occupational medical programmes in order to reduce mortality, morbidity and economic losses due to occupational diseases and accidents in the mining and other industries.

SES 001 (2201) Water and sewerage services administration, La Paz (1971-) PW—To strengthen the administration of the National Water and Sewerage Corporation.

SES 002 (2202) Water and sewerage services administration, Cochabamba (1971-) PW—To strengthen the Municipal Water, Sewerage and Drainage Service and improve its administration.

SES 003 (2203) Water and sewerage services administration, Potosí (1972-74) PW—To strengthen the Autonomous Sanitation Works Administration, Potosí, in order to ensure that the new potable water system for the city, partly financed by the Inter-American Development Bank, will be efficiently constructed and subsequently that it will be administered, operated and maintained in accordance with the latest technical standards and will be self-financing. Provided—7 consultants, and advisory services of the sanitary engineer attached to project Bolivia BSM 001 (2100).

Substantial improvements were achieved in accounting, budgeting, financing, audit, procurement, personnel administration, water rates, billing and collection, and public relations.

DHS 001 (3500) Health statistics (1968-) PR—To develop a national statistics system to provide the data required for planning and programming in the health sector.

3105 Emergency assistance (1974) PG: Organization of American States—Following serious floods that occurred in the Beni region and affected the city of La Paz in February 1974, the Organization of American States provided, from its Emergency Fund, 2 hospital launches and 100 prefabricated dwellings, and transferred the sum of \$40 000 to the Organization for the purchase of medicaments.

Brazil

SHS 001 (3101) Health services in states and territories (1958-) R PR UNICEF—To reorganize the central agencies of the ministries of health of the 9 north-eastern states, coordinate their health institutions, organize a system of regionalization, establish health planning processes in the ministries of health, develop a uniform statistical system, incorporate nutrition work into the health plans, improve the structure of the institutions in charge of water and sewage disposal services, and train health personnel.

SHS 002 (3104) Health services, south-east region (São Paulo) (1972-79) R PR—To develop the administration and planning of health and sanitation programmes in the south-eastern states.

SHS 004 (3109) Health services, Amazon basin (1971-77) R PR—To implement the health plan forming part of the integration project for the Amazon region.

SHS 005 (3110) Health services, southern region (1968-) R PR—To strengthen the planning and administration of the health services in the southern region, including the states of Paraná, Rio Grande do Sul, and Santa Catarina.

SHS 006 Nursing services (1974-) PR—To strengthen and coordinate the nursing services, improve the utilization of available resources, and train personnel.

SHS 007 (3600) Administrative methods and practices in public health (1973-76) R—To improve the organizational structure and administrative procedures of the health services.

SHS 009 (4800) Medical care services (1966-77) PR—To improve the organizational structure of the medical care services so as to increase their productivity, raise the quality of services, reduce costs, and achieve wider geographical and population coverage.

SHS 010 (5001) Rehabilitation training centre, Brasília (1973-76) PR—To provide training in medical rehabilitation techniques for doctors, and refresher training for physical and occupational therapists and for prosthetists.

SHS 011 (3112) Health services, west-central region (1973-) R UNICEF (ILO) (FAO) (UNESCO)—To develop the planning and administration of health activities within the context of the national health policy and regional and state development plans.

MCH 002 (4900) Demography and population dynamics (1971-) PG: USAID—To carry out research and provide university-level courses in population dynamics, with emphasis on the relationship between health and population structure.

MCH 003 (4901, formerly 4101) Maternal and child health (1971-77) R—To reduce maternal and infant morbidity and mortality by means of a coordinated programme of health assistance during the perinatal period, and carry out the necessary teaching and research work.

NUT 001 (4200) Nutrition (1974-) PR—To formulate the national food and nutrition policy and develop a broad food and nutrition programme for the whole country.

NUT 002 (4203) Institute of Nutrition, Recife (1964-) PR—To strengthen the structure and activities of the Institute of Nutrition of the Federal University of Pernambuco (formerly the University of Recife), to enable it to contribute more effectively to the solution of regional nutrition problems.

HED 001 (3400) Health education (1968-) R PR—To reorient health education activities in the technical health education units and in teaching institutions.

HMD 001 (6102) Human resources development (1971-78) R PR—To increase the number and improve the quality of health personnel by improving the effectiveness of educational institutions, particularly the National School of Public Health, Rio de Janeiro.

HMD 002 (6200) Medical education (1965-77) R PR—To strengthen the medical education programme and improve the administration of the School of Medical Sciences of the Guanabara State University.

HMD 003 (6225) Biomedical information network, São Paulo (1973-) UNDP—To improve the country's biomedical information system.

HMD 004 (6233) Latin American Centre of Educational Technology for Health (1972-77) PR PH—To improve the teaching-learning process in health sciences education through the provision of services in education technology.

HMD 005 (6302 and 6305) Training of nursing auxiliaries and nursing education (1963-73) R PR UNICEF—To increase the supply and improve the training of nursing personnel to meet the health needs of the country. Provided—a nurse instructor (from 1964), advisory services by nurses assigned to other projects, 6 fellowships, seminar and course costs, and supplies and equipment.

Under project Brazil 6302 a total of 4184 nursing auxiliaries and 630 instructors were trained. Accomplishments under project Brazil 6305 included the preparation of a document on health manpower by the Human Resources Department of the President Castello Branco Institute, the definition of responsibilities of nursing staff at various levels, the definition of a basic curriculum for the training of nursing auxiliaries, and the preparation of a bill to establish State Nursing Councils to supervise nursing practice and education.

HMD 007 (6401) Sanitary engineering education (1973-77) PR—To establish a training programme, at undergraduate, graduate and continuing education levels, for some 60 000 staff working in, or to be recruited for, the water supply programme under which it is aimed to provide water to 80% of the urban population by 1980.

HMD 008 (6000) Medical textbooks and teaching materials (1967-) PK—To make low-cost textbooks available to medical and nursing students.

ESD 001 (0100) Epidemiology (1969-) R PR PG: Harvard University, USA—To develop and coordinate programmes for the control of communicable diseases, organize epidemiological services and surveillance systems and train personnel in epidemiology.

ESD 002 (0114) Surveillance and research on infectious diseases along the Trans-Amazon Highway (1973-78) PR PG: US Army Medical Research and Development Command—To carry out, in areas adjacent to the Trans-Amazon Highway, multidisciplinary studies on (i) diseases and their causative agents introduced by the work force and colonists coming from other parts of Brazil, and (ii) local diseases and infectious agents of the Amazon area that may affect the immigrants.

ESD 003 (0115) Infectious disease transmission along the Trans-Amazon and the Cuiabá-Santarém Highways (1973-) PR PG: US Army Medical Research and Development Command—To study the epidemiology of disease transmission among various population groups along the Trans-Amazon and Cuiabá-Santarém Highways, and to make investigations in the same area on the relation of ecological changes to frequency of disease transmission.

MPD 001 (0200) Malaria eradication programme (1958-) R PR

MPD 002 (1000) Schistosomiasis (1971-) R—To carry out clinical and epidemiological research on hycanthone therapy; and to clarify the taxonomy of schistosomiasis snails of medical interest.

Brazil (continued)

MPD 003 (1001) Chagas' disease (1973-) R—To develop a national campaign for the control of Chagas' disease.

SME 001 (0300) Smallpox eradication (1956-77) R—To maintain the level of immunization against smallpox in the population and carry out epidemiological surveillance work.

MBD 001 (0400) Tuberculosis control (1966-77) R—To develop a network of tuberculosis bacteriological laboratories as the first part of a programme for integrating tuberculosis control work into the general health services.

VPH 001 (0700) Veterinary public health (1969-77) R PG: Government of Brazil—To extend programmes for control of the principal zoonoses, particularly rabies; to establish a technical and administrative structure for standardizing rabies vaccine production and application; and to carry out epidemiological research on rabies and other zoonoses.

VPH 004 (0703) Animal health programme, Rio Grande do Sul (1974-77) PR—To plan and execute a programme for the control of animal diseases, particularly foot-and-mouth disease, in Rio Grande do Sul.

In 1974, 2 courses on the administration and implementation of animal health programmes were given for 22 participants from 12 Latin-American countries. They consisted of academic training in Porto Alegre (using the facilities of the animal health programme), followed by a period of practical demonstrations in the pilot areas of Pelotas and Uruguayana, Rio Grande do Sul.

VBC 001 (0901) Plague research (1965-77) R—To plan and carry out a research programme that could serve as a basis for a reorientation of the control of plague in the country.

VBC 002 (2300) Aedes aegypti eradication (1970-)

CAN 001 (5101) Cancer control (1971-77) R—To carry out a cancer control programme including early detection and treatment of cancer, the setting up of cancer registries in certain areas, the promotion and organization of antismoking campaigns, and the putting into operation of integrated medical care systems.

CVD 001 (5102) Pan American cardiovascular research centre (1974-) R—To set up a centre for research and training in cardiovascular and other chronic diseases that will eventually also serve other countries of the Region.

MNH 001 (4300) Mental health (1968-77) PR—To implement a comprehensive mental health programme covering modernization of psychiatric hospitals, development of ambulatory and community services, training of staff and promotion of research.

RAD 001 (4500) Radiation protection (1972-) R—To develop a radiation protection programme and train personnel in radiotherapy physics.

IMM 001 (3315) Immunology research and training centre (1973-) PR—To provide, at the immunology research and training centre in the Butantan Institute, São Paulo, postgraduate training in immunology to students from Brazil and other countries of the Americas; and to develop, at the Institute, a research programme in basic immunological mechanisms and their application to local public health problems.

ISB 001 (3302) Yellow fever laboratory (1950-77) PR—To support the continent-wide campaign against yellow fever by providing laboratory diagnostic services and supplying yellow fever vaccine.

ISB 002 (3303) Vaccine programme, Adolfo Lutz Institute (1974-) PR—To strengthen the research programme at the Adolfo Lutz Institute.

BSM 001 (2100) Engineering and environmental sciences (1952-77) R PR—To improve environmental sanitation, with emphasis on the development of urban and rural water supplies, water and air pollution control, housing, industrial hygiene, and training of personnel.

BSM 002 (2103) Environmental pollution control, São Paulo State (1971-75) UNDP—To develop an environmental pollution control programme (covering air, water and soil pollution) for the state.

BSM 003 (2104) Environmental pollution control, Guanabara State (1973-76) UNDP—To find long-term solutions to the problem of environmental pollution through research, training and pre-investment studies.

BSM 004 (2200) Water supply and sewerage (1962-) R—To intensify the development of water and sewerage services in urban and rural areas.

SES 001 (2201) Water supply and sewerage, São Paulo (1969-74) PW—To strengthen the administration of the São Paulo water and sewerage authority. Provided—2 administrative methods officers, 7 consultants, contractual services, and course costs.

During the course of the project, the number of inhabitants served by water supplies rose from 3 300 000 to 4 180 000, and the number of those benefiting from sewerage services from 1 925 000 to 2 567 000. Sixteen training courses were conducted for over 400 officers and a number of administrative improvements were effected.

SES 002 (2203) Water and sewerage services administration, Espírito Santo (1972-75) PW—To improve the technical services and administration of the Espírito Santo Sanitation Company.

SES 003 (2204) Water and sewerage services administration, Minas Gerais (1972-74) PW—To improve the technical services and administration of the Minas Gerais water and sewerage company.

SES 004 (2206) Water and sewerage services administration, Paraná (1972-) PW—To improve the technical services and administration of the Paraná sanitation company.

SES 005 (2205) Water and sewerage services administration, Santa Catarina (1974-75) PW—To provide potable water services for 80% of the urban population of the state.

FSP 001 (4701) Drug Quality Control Institute, São Paulo (1973-) UNDP—To strengthen the capability of the drug control agencies to carry out inspection and testing of drugs.

DHS 001 (3500) Health statistics (1963-) R—To improve health statistics and their use in the planning, implementation and evaluation of health programmes, and to train statistical staff.

DHS 002 (3502) Health information system (1973-77) R PR—To plan a health information system as part of the general health system, define its subsystems, and determine its relations with other systems.

Canada

SHS 001 (3100) Consultants in specialized fields (1974-) R PR—To study special problems related to health.

SHS 002 (3700) Health planning (1973-77) PG: Government of Canada—To carry out activities related to health planning, teaching of biostatistics, and research design and operation.

HMD 001 (6201) Conference on Health Manpower Planning (1973-75) PG: Government of Canada—To conduct studies on priority areas as identified by the Conference on Health Manpower Planning held in September 1973. These studies will complement or reinforce ongoing research programmes in the country.

HMD 099 (3101) Fellowships R PR

Chile

SHS 001 (3100) Health services (1961-78) R PR—To strengthen the administration of the national health services.

SHS 002 (3105) Health manpower studies (1968-77) R—To carry out studies on health manpower requirements and utilization.

SHS 005 (4801) Hospital maintenance (1971-77) PR—To develop a national programme for the maintenance of health care facilities.

SHS 006 (5000) Rehabilitation (1960-) R UNDP—To implement a rehabilitation programme directed particularly to the training of specialists in the rehabilitation of the deaf.

MCH 004 (4903, formerly 4101) Extension of maternal and child health and family welfare services (1972-77) R UNFPA—To improve maternal and child health and family wellbeing through extension of the coverage and improvement of maternal and child health services, including fertility regulation activities.

MCH 005 (4902, formerly 4100) Maternal and child health (1967-) R—To develop a programme of training and research on biological and social aspects of human reproduction and child growth and development; and to improve maternal and child health care.

MCH 006 (4905, formerly 4103) Clinical and social paediatrics courses (1967-77) R—To provide intensive training in social and clinical paediatrics and in the administration of health services for infants and children.

NUT 001 (4200) Nutrition (1971-77) PR—To develop and strengthen nutrition programmes and include nutrition activities in local health services.

NUT 002 (4201) Training in nutrition and human growth and development (1968-75) PR—To train research workers from Latin America in nutrition and human growth and development.

HMD 001 (6200) Medical and health sciences education (1962-) R PR—To expand and strengthen medical education, and to develop a programme of medical internships in rural hospitals for students of the medical professions.

HMD 003 (6400) Sanitary engineering education (1965-77) R—To train professional, technical and auxiliary personnel needed for environmental sanitation programmes; and to strengthen sanitary engineering education in universities.

HMD 004 (6600) Dental education (1965-77) R—To improve dental education in the universities, particularly as regards training in biology and in the preventive and social aspects of dentistry.

ESD 001 (0100) Communicable disease control (1973-78) PR—To keep the country free from smallpox, maintain the reduction

in the number of cases of tuberculosis, reduce the incidence of and mortality from other diseases controllable through protective measures, and strengthen measures to control venereal diseases.

VPH 001 (0700) Veterinary public health (1971-77) PR—To eradicate canine rabies, implement a programme for anthrax control in Ñuble Province, and control other zoonoses.

VPH 002 (0800) Foot-and-mouth disease control (1974-) PR (Inter-American Development Bank)—To carry out a national campaign for the eradication of foot-and-mouth disease.

VPH 003 (6500) Veterinary medical education (1966-) PR—To strengthen the teaching programmes in veterinary medicine, public health and epidemiology in the schools of veterinary medicine of the University of Chile and the Austral University of Valdivia.

OCD 001 (5100) Chronic diseases (1973-78) PR—To organize a comprehensive programme for the control of chronic diseases that includes primary prevention, the strengthening and coordination of medical care facilities, the detection and treatment of early cancer, and radiation protection.

DNH 001 (4401) Centre for oral pathology (1973-) PR PS—To develop, in the Department of Oral Pathology of the Faculty of Dentistry, University of Chile, a reference centre for the systematic collection, cataloguing and indexing of clinical pathological conditions in Latin America and for the training of oral pathologists and technical personnel from Latin American countries.

MNH 001 (4300) Mental health (1965-) PR—To develop community mental health techniques in a health district of Santiago, with a view to their subsequent application in the rest of the country, and to conduct epidemiological studies on mental disorders.

LAB 001 (3301) Bacteriological Institute (1972-78) UNDP—To expand and improve the Institute, and strengthen the network of health laboratories.

BSM 001 (2100) Engineering and environmental sciences (1968-) R—To integrate sanitation programmes into the country's development plans, establish an environmental sanitation system to coordinate the work of various agencies operating in this field, establish a national waste disposal programme and a national air pollution control policy, and control air pollution in the Greater Santiago area.

0400 Tuberculosis control (1964-74) PR—To develop a tuberculosis control programme integrated into the general health services. Provided—4 consultants (130 consultant/days in all) between 1964 and 1971, 35 fellowships, and, starting in 1970, assistance with lectures at the national course for physicians on tuberculosis control.

BCG vaccination was included in the daily work of all hospital and outpatient services for maternal and child care. In 1972, 90.9% of the children born in health institutions were vaccinated, the percentage of vaccinated among all newborn in the country being 76.8. Bacteriological diagnosis and chemotherapy were integrated into the work of the general health services; in 1972 the 115 640 bacilloscopies made for diagnosis represented 68.5% of the target. Mortality from tuberculosis, which was 53.6 per 100 000 in 1963, had dropped to 23.7 per 100 000 by 1972.

3107 Emergency assistance (1974) PR PG: Organization of American States (Office of the United Nations Disaster Relief Coordinator)—Medicines, insecticides, and other supplies and

Chile (continued)

equipment were purchased and sent to Chile to assist in bringing relief to the victims of the floods that occurred in 13 provinces in July 1974.

6100 School of public health (1958-73) R—To strengthen the School of Public Health of the University of Chile and expand and improve its methods and facilities for training students from other countries. Provided—advisory services by the PAHO/WHO country representative and staff members, 16 consultants, a temporary adviser, and 16 fellowships for professors.

The school provided training for national health personnel and for professionals from other countries. In 1968 it became the Department of Public Health and Social Medicine and its structure was changed to provide for closer integration of studies at the undergraduate level.

By 1968, 3398 students, not including 188 special students, had completed the regular courses. A number of special courses and other training activities were organized: in 1965 a health planning course was given for 30 heads of Chilean health services; in 1971, 2 seminars were held to define the objectives of the undergraduate and graduate programmes, and a course on women's health and medical care was organized; in 1972 the third Latin American maternal and child health seminar was held.

A number of research programmes were carried out and extensive assistance was provided for the inter-American investigation of mortality in childhood (intercountry project HSM 001 (AMRO 3513)).

Between 1965 and 1973, the Organization awarded fellowships to 332 students from Latin American countries for attendance at the School's courses.

The activities of the project were transferred to project Chile HMD 001 (6200) at the end of 1973.

Colombia

SHS 001 (3100) Health services (1951-) R UNDP PR—To extend the coverage of the health services and improve their structure and operation.

SHS 002 (3600) Administrative development of health services (1972-) UNDP—To develop the health services administration, in accordance with the policy for redesign of the health system.

SHS 003 (3700) Health planning (1974-) PR—To develop the country's planning process, introducing a national information system and redefining the system of health services.

SHS 004 (4801) Hospital maintenance and engineering (1972-) UNDP PG: Government of Colombia—To establish a national centre to train personnel and carry out repair and maintenance of hospital equipment.

SHS 005 (5001) Medical rehabilitation (1973-75) UNDP—To develop medical rehabilitation services throughout the country and provide basic or refresher training for physical and occupational therapists and for prosthetists for these services.

SHS 007 (4800) Medical care administration (1973-) PG: Government of Colombia—To strengthen the structure of the National Hospital Fund, which is the responsible organ, within the Ministry of Public Health, for the technical and financial management of the national hospital planning system.

MCH 003 (4900) Health and population dynamics (1968-) UNFPA PR PG: USAID (Kellogg Foundation)—To extend maternal and child health care and family welfare services to the

rural areas, improve their administration and the reporting system; and train rural health personnel.

MCH 004 (4903, formerly 4100) Social services (1970-) PR—To carry out intersectoral programmes aimed at providing comprehensive care to children and young adults within the context of protection of the family.

MCH 005 (4904, formerly 4101) Clinical and social paediatrics (1964-) R—To improve the preparation of paediatricians through the provision of 3-month postgraduate courses, in order to prepare them better for dealing with problems that affect the health of children and for improving the administration of health services for children.

NUT 001 (4200) Nutrition (1964-) PR—To train academic staff to upgrade teaching in the schools of nutrition and dietetics.

HMD 001 (6100) School of public health (1959-77) R—To strengthen the School of Public Health of the University of Antioquia.

HMD 002 (6201) Health manpower development (1959-) PR—To improve the preparation of medical teachers and expand extramural instruction by means of short courses and the issue of periodicals.

HMD 003 (6300) Nursing education (1968-77) PG: USAID—To improve and expand nursing education programmes in order, with the new personnel development policy, to achieve the objectives of the Ten-year Health Plan for the Americas.

HMD 004 (6400) Sanitary engineering education (1964-77) PR—To improve the teaching of sanitary engineering in the universities and provide short intensive courses in sanitary engineering subjects.

HMD 005 (6600) Dental education (1961-75) PR—To develop the dental education programmes at the National University, Bogotá, and the Universities of Valle, Antioquia and Javeriana.

MPD 001 (0200) Malaria eradication programme (1958-) PR

SME 001 (0300) Smallpox eradication (1967-) R—To carry out a campaign aimed at vaccinating at least 80% of the population against smallpox and to organize epidemiological surveillance.

MBD 001 (0500) Leprosy control (1971-75) PR—To study the relationship of *Mycobacterium leprae* and the human host and carry out research on the experimental transmission of *M. leprae* and *M. lepraemurium* to laboratory animals.

VPH 001 (0700) Veterinary public health (1971-) R—To implement programmes for the control of the main zoonoses, and train the necessary staff.

VPH 002 (0701) Rabies control (1971-76) R—To control urban canine rabies and reduce the risk of transmission to man.

VPH 003 (0800) Foot-and-mouth disease control (1973-77) PR—To develop a national campaign for the control of foot-and-mouth disease and brucellosis.

VPH 004 (6500) Veterinary medical education (1969-) PR—To improve the teaching of veterinary public health and related subjects in the schools of veterinary medicine and the veterinary medicine programme of the School of Public Health, University of Antioquia.

VBC 001 (2300) Aedes aegypti eradication (1951-77) PR

LAB 002 (3301) National Institute of Health (Carlos Finlay) (1950-) PR—To strengthen the work of the public health laboratory and the production of biologicals at the National Institute of Health and improve its diagnostic and reference sections and its administrative organization.

BSM 001 (2100) Engineering and environmental sciences (1970-) R—To improve the national, regional and local environmental sanitation programmes, including those covering provision of water supply and sewerage systems and water pollution control.

SES 001 (2102) Studies on water quality (1969-) PW—To conserve and make the best possible use of the water resources of the Bogotá savanna and the Ubaté and Chiquinquirá valleys.

SES 003 (2202) Water and sewerage services administration (1971-74) PW—To strengthen and improve the organization and administration of the National Institute of Municipal Development.

SES 004 (2105) Development of the Cauca River basin (1973-75) PG: Cauca Valley Regional Autonomous Corporation—To establish policies for controlling water pollution and planning the use of water resources in connexion with the development of the Cauca River valley.

FSP 001 (4700) Food hygiene (1973-77) R—To develop a food protection programme covering all aspects of food production, processing, transport and commercial distribution, and training of personnel.

DHS 001 (3501) Redesign of health information system (1972-75) UNDP—To redesign the system so as to provide the information required for decision-taking at all levels of the health system.

4802 Hospital administration, Beneficiencia de Cundinamarca (1974-) PG: Government of Colombia—To improve the management policies, structure and administrative systems of the medical care and hospital institutions of the Beneficiencia; to prepare manuals for the implementation of the new system; and to train personnel.

Costa Rica

SHS 001 (3100) Health services (1959-) R PR UNICEF—To improve the administration of the health services, and their quality, efficiency and productivity; and to prepare a health plan, a general health law, and legislation defining the structure of the Ministry of Public Health.

SHS 002 (3104) Rural health (1972-) PR—To extend basic health services to rural communities through the use of supervised auxiliary personnel.

SHS 003 (3700) Health planning (1973-77) R UNDP—To carry out a programme of evaluation leading to reorganization of the infrastructure of the health sector; and to design the administrative and control units required in order to execute health programmes more scientifically.

SHS 004 (4800) Medical care services (1967-) R—To improve the organization and administration of the medical care services and to train personnel.

MCH 001 (4900) Health and population dynamics (1971-74) PR PG: USAID (Kellogg Foundation)—To reduce maternal and child morbidity and mortality resulting from multiparity. Provided—2 consultants, advisory services by the PAHO/WHO country representative and staff of other projects, a fellowship, supplies and equipment, and a grant.

The project was carried out at the maternity departments of the 3 hospitals of the Ministry of Public Health, 3 hospitals of the Social Security Fund, 8 clinics and 29 health units. A data-processing centre for collection of statistics and an educational technology centre for production of educational materials were established.

The project is to become part of a national family planning and sex education programme to be carried out with assistance from UNFPA, the Ford Foundation, the International Planned Parenthood Federation and USAID.

HMD 001 (6200) Teaching of health sciences (1971-) R—To strengthen the basic professional education of physicians and allied health personnel.

HMD 002 (6300) Advanced nursing education (1959-77) PR—To improve the education programmes in nursing and obstetrics and incorporate them into the country's higher educational system.

HMD 003 (6400) Sanitary engineering education (1965-77) PR—To strengthen the teaching of sanitary engineering at the School of Engineering of the University of Costa Rica and provide short intensive courses on sanitary engineering subjects for personnel working on environmental health programmes.

HMD 099 (3103) Fellowships UNDP

MPD 001 (0200) Malaria eradication programme (1957-) R PR

MBD 001 (0400) Tuberculosis control (1971-) PR—To incorporate tuberculosis control work into the general health services and train personnel of the services in control methods and techniques.

RAD 001 (4500) Radiation protection (1972-75) PR—To develop a national radiation protection programme including a census of radiation sources, a personnel radiation dosimetry monitoring service, and field inspections and consultations.

LAB 001 (3300) Laboratory services (1970-) PR—To improve and expand the health laboratory services at the central, regional and local levels.

BSM 001 (2100) Engineering and environmental sciences (1969-) PR—To extend the coverage of environmental sanitation services, expand the operating capacity of national agencies, and improve the control of factors affecting the environment.

BSM 002 (2200) Water supply and sewerage (1960-) PR—To improve the structure and administration of the national water and sewerage service; and to plan and carry out programmes for the construction and extension of water supply and sewerage systems in urban and rural areas.

CEP 001 (2500) Air pollution (1970-77) PR—To determine the characteristics of air pollution in San José, and the trends in pollution levels.

DHS 001 (6700) Biostatistics education (1966-77) R—To train medical records librarians for hospitals in Costa Rica and other Latin American countries.

Cuba

SHS 001 (3100) Health services (1959-) R UNDP—To extend and improve the health service system in specific areas and secure greater community involvement; to train health personnel and to carry out research.

Cuba (continued)

SHS 002 (4800) Hospital administration and equipment maintenance (1974-) PR—To raise the level of medical care services by improving hospital administration, organizing the maintenance of hospital equipment, and training the necessary personnel.

MCH 002 (4901, formerly 4100) Maternal and child health (1972-77) PR UNICEF—To improve and extend the services for maternal and child health care, particularly as regards perinatal care.

NUT 001 (4200) Nutrition (1965-) PR—To establish a national food and nutrition policy, coordinate the work of the various entities with responsibility for food supply, form technical groups entrusted with conducting nutrition programmes, and strengthen the training of personnel.

HMD 001 (6200) Health manpower development (1965-) R PR—To prepare teaching staff for the health professions and modernize curricula.

HMD 002 (6400) Sanitary engineering education (1966-77) R—To strengthen the training of specialized personnel engaged in sanitary engineering work.

ESD 001 (0100) Communicable disease control (1967-) R PR UNICEF—To reduce morbidity and mortality caused by tetanus, diphtheria, pertussis, measles, infectious hepatitis and leprosy; and to keep the country free from cholera.

VPH 001 (0700) Zoonoses control (1969-) PR—To intensify zoonoses control and eradication programmes within the context of veterinary public health plans.

VBC 001 (2300) Aedes aegypti eradication (1953-77) R

MNH 001 (4300) Mental health (1973-) PR—To develop mental health programmes and extend their coverage to the whole population.

ISB 001 (3301) Modernization of laboratory services (1971-76) UNDP—To expand the facilities of the new Finlay Institute for the production of biologicals for the prevention, diagnosis and treatment of communicable diseases, improve the quality of such products, and train personnel.

LAB 001 (3300) Laboratory services (1968-77) R—To strengthen the National Institute of Hygiene, Epidemiology and Microbiology.

BSM 001 (2100) Engineering and environmental sciences (1969-) R—To strengthen programmes for the improvement of environmental sanitation and train staff.

BSM 002 (2200) Water supply and sewerage (1966-77) R—To strengthen the water supply programme in urban and rural areas.

HWP 001 (4600) Industrial hygiene and occupational health (1969-) PR—To strengthen the national programmes of occupational health and safety, including training.

FSP 001 (4700) Food and drug control (1973-77) R—To control the quality of pharmaceutical preparations.

Dominican Republic

SHS 001 (3100) Health services (1953-77) R UNDP PR PG: Organization of American States UNICEF—To develop the health services and improve their organization and functioning.

NUT 001 (4200) Nutrition (1965-77) R PR—To implement a national food and nutrition policy, and develop nutrition education and food supplement programmes.

HMD 001 (6201) Health manpower development (1968-77) R—To develop a programme for training professional and technical health personnel in accordance with the country's needs.

HMD 002 (6400) Sanitary engineering education (1969-77) R—To train professional and technical staff of sanitation programmes and strengthen sanitary engineering education.

MPD 001 (0200) Malaria eradication programme (1973-74) R PR—Further assistance was provided by advisory staff to prepare a plan for entomological activities.

For work done under this project between 1952 and 1973, see the Annual Report for 1973.¹

MBD 001 (0400) Tuberculosis control (1963-75) UNDP PR—To extend the national tuberculosis control programme and integrate it into the general health services; and to train personnel in modern control methods.

VPH 001 (0700) Veterinary public health (1973-77) PR—To carry out an animal health programme as part of an integrated programme of agricultural development.

BSM 001 (2100) Engineering and environmental sciences (1971-) R—To implement a programme for the installation of latrines, mainly in the communities covered by the rural water supply plan of the National Water Supply and Sewerage Institute.

BSM 002 (2200) Water supply and sewerage (1962-77) PR—To provide water supply facilities to 62% of the urban and 25% of the rural population and sewerage facilities to 17% of the urban population; to integrate into the National Water Supply and Sewerage Institute 45% of the systems operated by the municipalities; and to strengthen the administration of the Institute.

BSM 003 (2204) Water and sewerage services administration, Santo Domingo (1973-77) PW—To organize the technical and administrative units of the Santo Domingo Water and Sewerage Corporation and prepare a plan for transferring to the Corporation the activities, facilities, assets and staff of the Santo Domingo Water Administration.

Ecuador

SHS 001 (3100) Health services (1953-) R PG: Ecuadorian Institute of Social Security UNICEF—To organize a national system of health services.

SHS 002 (3103) Modernization of rural life (1972-) R—To extend health services into rural areas covered by the Andean Mission, as part of the country's rural health programme; to integrate and coordinate them with services in agriculture and education, and to place them under the jurisdiction of the Ministry of Public Health in accordance with its regionalization plan.

SHS 003 (3106) Strengthening of the health sector (1973-) UNDP—To improve the health services and extend them to rural areas by building up first the infrastructure of the Ministry of Public Health and later that of the whole health sector, with emphasis on planning and management and on the use of statistical and epidemiological information.

SHS 004 (3600) Administrative methods and practices in public health (1971-) PR—To develop and modernize administrative systems in the health sector and train the necessary staff.

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, p. 214.

SHS 005 (3700) Health planning (1969-) UNDP—To develop the infrastructure of the Ministry of Public Health and institute planning, information and control mechanisms with a view to establishing the best possible national health system.

SHS 006 (4800) Medical care services (1971; 1973-) PR—To develop medical care services and improve the utilization of services.

MCH 001 (4900) Maternity-centred family planning programme (1972-74) UNFPA PR PG: USAID—To develop selected areas of maternal, neonatal and child care services. Provided—4 consultants, advisory services by staff members, a grant, costs of 2 local courses and 2 national seminars, and supplies and equipment; and, under other projects, 16 fellowships.

Technical and administrative changes were made in the National Health Promotion Division and its maternal and child health and population departments. The maternal and child welfare plan for 1973-77 was prepared and new targets, geared to the national health plan and the Ten-year Health Plan for the Americas, were set for 1974. Organizational and operating standards were issued for neonatology, obstetrics and gynaecology services. Equipment was installed and supplies made available to various departments of the Isidro Ayora Maternity Hospital, Quito. Fertility regulation was included in the integrated health services offered to women during the postpartum and interconceptual period.

Assistance was rendered in setting the curricula of schools of obstetrics and determining the functions of nurses and midwives in maternity care. In collaboration with the Latin American Centre for Perinatology and Human Development, 3 courses in perinatology and high-risk pregnancy were held for 286 medical professionals and midwives.

MCH 002 (4909) Teaching and research in maternal and child health (1972-74) PG: USAID PK (Kellogg Foundation)—To improve undergraduate and postgraduate teaching of maternal and child health and develop a project for applied research in human reproduction, socioeconomic status, and maternal and child health. Provided—5 consultants, advisory services by staff members, supplies and equipment, and a grant.

The experimental design was completed for a study of the effects of family size and of the mother's reproductive history on the health of the family, especially infants. The Organization advised on the formulation of hypotheses and aims, the identification of work areas, and the study of the sociobiological characteristics of the sample population.

National committees on the teaching of paediatrics, gynaecology, obstetrics and nutrition were formed. Three courses in medical pedagogy were held (in Cuenca, Guayaquil and Quito), as were a workshop on paediatric pathology and 3 national meetings on the teaching of paediatrics, gynaecology, obstetrics and nutrition in medical schools.

Equipment was supplied to audiovisual units and books to medical school libraries specializing in population, demography, human reproduction, paediatrics, gynaecology, and obstetrics.

MCH 003 (4902) Maternal and child health (1974-) PR—To improve health care for mothers and children, diminishing risks to the susceptible population, reducing maternal and infant morbidity and mortality rates, and implementing a policy of maternal, infant and family protection.

NUT 001 (4200) Nutrition (1971-) R—To reduce the incidence of nutritional deficiency diseases by means of integrated health activities coordinated with action in the agricultural and educational fields; and to implement measures for achieving an optimal nutritional level in the population.

NUT 002 (4202 and 4204) Endemic goitre and mental retardation (1966-74) PR (National Association for Retarded Children, USA)—To study the effect of parenteral administration of iodized oil on endemic goitre and endemic cretinism. Provided—grants, equipment and supplies, and advisory services by consultants and regular staff specialized in nutrition.

The localities of Tocachi and La Esperanza were selected for the study because of their high prevalence of endemic goitre (70.9% and 51.8% respectively) and of cretinism. La Esperanza was used as the control against which to compare the effect of the iodized oil injections administered to pregnant women and children of Tocachi.

In 1966 a preliminary census and nutritional and anthropological surveys were carried out, and a clinic, with an attendant physician, was established. Within a year of the administration of iodized oil the incidence of endemic goitre was reduced by 30%, and further improvement was noted when a check was made 6 months later.

Significant among the encouraging findings of the investigation were the absolute prevention of goitre in children born to mothers who had received treatment; a drastic reduction in the prevalence of goitre among those inoculated; maintenance of urinary excretion of iodine above the basal value 4 years after inoculation with iodized oil; and normal capacity to secrete thyroxin among the persons treated, even during the first 6 months following the injection of ethiodol, when the iodate absorption capacity is depressed.

In addition to achieving its primary objective, the investigation yielded a considerable amount of information regarding patterns of growth and development, dentition, child care, lactation, and morbidity in the population under study.

HED 001 (3400) Health education/family planning (1972-) R—To expand and consolidate health education services and train national staff and teaching personnel in health educational methods, with emphasis on family life education.

HMD 001 (6200) Medical education (1965-) R PR—To improve medical education at the undergraduate and postgraduate levels and carry out programmes of continuing education.

HMD 002 (6300) Nursing education (1957-) R PR—To strengthen the teaching in the schools of nursing and expand in-service training for nurses and nursing auxiliaries.

HMD 003 (6400) Sanitary engineering education (1965-) PR—To strengthen the teaching of sanitary engineering in the universities, provide short intensive courses in specific sanitary engineering subjects, and train technical and auxiliary personnel working on environmental sanitation programmes.

HMD 004 (6600) Dental education (1963-) R PR PG: Government of Ecuador—To strengthen the teaching of dentistry at the undergraduate and postgraduate levels and provide continuing education for practising dentists.

ESD 001 (0100) Epidemiology (1967-) R PR PH—To organize programmes for the surveillance and control of communicable diseases.

MPD 001 (0200) Malaria eradication programme (1956-) PR UNICEF

MBD 001 (0500) Leprosy control (1963-73) R—To reduce the prevalence of leprosy. Provided—advisory services by the PAHO/WHO country representative and other staff members, 8 fellowships, equipment and supplies, including drugs, and the costs of 2 seminars.

Ecuador (continued)

Following an intensive general survey of the population, specific surveys of organized community groups were made, patients were interviewed and contacts examined. Follow-up treatment was provided for registered cases. Surveys of disabled persons were made for the purpose of giving physiotherapy. Leprosy control work was integrated into the other activities of the Ministry of Public Health.

A suitable level of operations was maintained in all priority activities such as case-finding, including contact examination. Drug delivery was regular, but less frequent because of difficulties encountered in mobility of field personnel.

The number of leprosy cases was estimated initially at 3500, and the target of detecting 80% of the estimate was almost reached. The percentage of clinical forms remained at 40%.

VDT 001 (0600) Venereal disease control (1969-73) PR—To reduce the risk of contracting venereal diseases. Provided—consultants, advisory services by staff members, 5 fellowships, and supplies and equipment.

Activities under the project included standardization of diagnostic and treatment criteria; intensive serological surveys of exposed population groups; interviews of patients and examination of contacts; control of prostitution by means of laboratory examinations and preventive treatment; intensified educational work on venereal disease control and sex education among organized community groups; and improvement in the technical and administrative aspects of the control services.

Owing to the low socioeconomic level of most of the population, overcrowded conditions in the larger cities, migration to settlement areas (the eastern petroleum region), and the intense activity characteristic of international ports, little progress was made in control, and incidence rates, especially of syphilis and gonorrhoea, continued to rise. The shortage of laboratory materials and of premises made diagnosis and examination of cases difficult. Only limited instruction in venereology was given in the medical schools.

VPH 001 (0701) National veterinary laboratories (1973-77) UNDP—To produce and control vaccines against diseases affecting livestock; to establish laboratories for diagnosis of such diseases and to improve diagnostic services in the field.

VPH 002 (6500) Veterinary medical education (1971-77) R—To increase the number of veterinarians and improve the quality of instruction given in the schools of veterinary medicine, in order to meet the need for an increase in the production of animal protein for home consumption and export.

VPH 004 (0800) Foot-and-mouth disease control (1974-) PR (Inter-American Development Bank)—To carry out a national foot-and-mouth disease control programme.

RAD 001 (4500) Radiation protection (1969-74) PR—To develop a national radiation protection programme under the Ministry of Public Health. Provided—consultants, visits by regional advisers (40 days in all), 2 fellowships, and supplies to assist in the establishment of the environmental radioactivity surveillance laboratory and to improve the film badge dosimetry programme and the radiation inspection service.

A survey of radiation sources and of radiological protection resources was made, radiation protection legislation was passed, a film badge personnel dosimetry service (currently serving about 250 persons) was started, and a programme covering field inspection and the provision of advice concerning radiological protection was initiated.

In the area of surveillance of environmental radioactivity, a network of 3 air-sampling and 1 milk-sampling stations was

operated with the assistance of the Organization, and the process of acquiring a national capability was initiated.

In 1969, in collaboration with the Organization, the Ministry of Public Health sponsored a study group meeting on radiological protection, in which both health and atomic energy authorities of the Region participated.

LAB 001 (3301) National Institute of Health (1952-) PR—To strengthen the Institute and extend the health laboratory services.

BSM 001 (2100) Engineering and environmental sciences (1968-) R—To improve national, regional and local programmes for environmental sanitation, water supply and sewerage.

SES 001 (2201) Sewerage administration, Guayaquil (1972-74) PW—To develop the Guayaquil Municipal Sewer Company, introduce new systems and procedures, and train its staff, so as to facilitate the construction of a sewerage system for the city. Provided—consultants, advisory services by Zone IV office staff, contractual services, and seminar and course costs.

SES 003 (2202) Institutional development, National Institute of Sanitary Works (1974-77) PW—To provide training to the staff of the Institute in order to improve its management and services.

DHS 001 (3500) Health statistics (1973-) R—To improve the health statistical services and train statistical personnel.

2203 Institutional Development, Guayaquil Municipal Sewer Company (1974-) PW—To make a study to determine the operational capacity of and problem areas in the Guayaquil Municipal Sewer Company and draw up plans for improving and strengthening it.

El Salvador

SHS 001 (3100) Health services (1963-) R PR UNICEF (FAO) (UNESCO)—To carry out integrated health programmes as part of a national health plan.

SHS 002 (3200) Nursing services (1972-) PR—To develop nursing services and improve nursing education programmes.

SHS 003 (3600) Administrative methods and practices in public health (1973-) PR—To revise and improve the administrative methods and procedures of the Ministry of Public Health and Social Welfare.

SHS 004 (4800) Medical care services (1970-) R PR—To improve the organization and administration of hospitals under a system of regionalization aimed at the integration of preventive and curative care; and to train personnel.

SHS 006 (3300) Laboratory services (1970-77) PR—To develop and strengthen the national health laboratory services and train personnel.

HMD 001 (6200) Medical education (1965-) PR—To improve the organization of the School of Medicine and its faculty and teaching activities; and to increase the use of practical instruction in preventive medicine and public health.

HMD 002 (6400) Sanitary engineering education (1965-) PR—To strengthen the teaching of sanitary engineering at the University of El Salvador and improve the preparation of professional and auxiliary personnel engaged in environmental sanitation programmes.

MPD 001 (0200) Malaria eradication programme (1955-) R PR

MPD 002 (0216, formerly AMRO 0216) Research on the epidemiology of malaria in problem areas (1967-77) R PR—To investigate possible methods of interrupting the transmission of malaria in areas where technical problems have been encountered.

BSM 001 (2100) Engineering and environmental sciences (1971-75) UNDP—To plan and develop national environmental sanitation programmes, including programmes for water supply and sewerage, industrial hygiene, solid wastes disposal, housing and urbanization, food sanitation, and control of air and water pollution.

BSM 002 (2200) Water supply and sewerage (1961-) PR—To plan and develop national programmes of water supply and sewerage systems for urban and rural areas.

CEP 001 (2500) Air pollution (1970-77) PR—To continue the work of the air pollution monitoring station in San Salvador, which is part of the Pan American Air Pollution Sampling Network.

French Antilles and Guiana

HMD 099 (3101) Fellowships PR

MPD 001 (0200) Malaria eradication programme (1963-) PR

MPD 002 (1000) Parasitic diseases (1974-) PR—To control schistosomiasis, principally through measures to eliminate the vector snail.

LAB 001 (3300) Laboratory services (1967-77) PR—To develop the virus research laboratory of the Pasteur Institute in Cayenne, which is carrying out research on the transmission, reservoirs and epidemiology of virus diseases in the rain forest of French Guiana.

Grenada

SHS 001 (3100) Health services (1974-) PR—To improve the health care delivery system.

SHS 002 (4811, formerly West Indies 4811) Hospital administration (1972-75) UNDP—To improve the administration of medical care facilities and train the necessary staff.

SHS 003 (4800) Medical care and hospital administration (1974-) UNDP—To train personnel in hospital administration.

VPH 001 (0700, formerly West Indies 0700) Veterinary public health (1972-) R—To establish a veterinary public health unit in the Ministry of Health, with the primary objective of controlling rabies.

BSM 001 (2200) Water supply and sewerage (1974-) UNDP—To construct a water supply system and train personnel.

BSM 002 (2102, formerly West Indies 2102) Engineering and environmental sciences (1972-) UNDP—To develop a sewage disposal system for the Grand' Anse-Morne Rouge beach area of St George.

BSM 003 (2202) Water utility management (1973-) UNDP—To improve the organization and management of the Central Water Commission.

Guatemala

SHS 001 (3100) Health services (1954-) R UNICEF—To improve the organization of the health services and develop them in accordance with the national health plan.

SHS 003 (4800) Medical care services (1968-) PR—To strengthen the programmes of medical care.

MCH 001 (4900) Health and population dynamics (1972-) PR—To extend health care to 40% of pregnant women and of children under five years of age and family guidance services to 20% of women of childbearing age.

HMD 001 (6200) Medical education (1966-) PR—To reorganize undergraduate and postgraduate medical education, and the education of allied health personnel, in accordance with the country's health needs; and to improve the training of teaching staff.

HMD 002 (6400) Sanitary engineering education (1967-) PR VD—To improve teaching and research, and organize a programme of continuing education, at the Regional School of Sanitary Engineering for Central America and Panama, University of San Carlos.

HMD 003 (6600) Dental education (1969-) PR—To strengthen dental education through the training of teaching staff, the reorganization of the school of dentistry, and the orientation of teaching towards a knowledge of health problems and the factors influencing them.

ESD 001 (0100) Epidemiology (1973-) R—To improve the surveillance and control of communicable diseases.

MPD 001 (0200) Malaria eradication programme (1955-) R PR

VPH 001 (6500) Veterinary medical education (1962-) PR—To strengthen the teaching of veterinary medicine, with emphasis on extension services, epidemiology, and the preparation of zoonoses control programmes.

VPH 002 (0701) Rabies vaccine (1972-) PR—To reorganize and improve the Institute of Biology with a view to making it the supply centre for rabies vaccine for human and animal use in Central America and Panama.

LAB 001 (3300) Laboratory services (1964-73) UNDP PR PG: USAID—To organize a national system of laboratories meeting the requirements of the health plan, train personnel, and expand facilities for the production of biologicals to cover the needs of Central America. Provided—a medical officer, 9 consultants, advisory services of staff members, 13 fellowships, laboratory supplies and equipment, and grants for students attending the annual course for laboratory technicians.

In 1964 production of pertussis vaccine was started on an experimental scale. In 1965 the Institute of Biology performed 118 000 examinations relating to enterobacteria; administered 9537 rabies treatments to humans; produced 379 500 doses of smallpox vaccine, 394 240 ml of typhoid/paratyphoid vaccine, 6625 doses of bovine rabies vaccine and 7530 of canine rabies vaccine; and began experimental production of diphtheria and tetanus toxoids.

In 1966 the country absorbed a substantial portion of the biologicals produced; however, 8781 complete series of human rabies vaccine, 12 860 doses of canine vaccine and 1770 of bovine vaccine were distributed to neighbouring countries, along with 407 200 doses of smallpox vaccine and 289 840 ml of typhoid vaccine.

In the same year 53 701 serology tests and 12 912 bacteriological examinations for the diagnosis of syphilis were performed; 252 animals were examined for rabies; and 17 831 faecal specimens and 2959 food samples were analysed.

In 1967 the Government set up a Laboratories Department, which became responsible for developing health centre labora-

Guatemala (continued)

tories, producing and controlling biologicals, and training personnel.

BSM 001 (2100) Engineering and environmental sciences (1969–) PR—To develop water supply and environmental sanitation programmes in urban and rural areas and to train personnel.

CEP 001 (2500) Air pollution (1971–) PR—To install and maintain air sampling stations for determining the levels of air pollution in Guatemala City.

FSP 001 (4701) Unified food control laboratory (1974–77) UNDP PR PG: Government of Guatemala—To improve the control of food products by merging the Food Control and Analysis Division of the Institute of Nutrition of Central America and Panama with the Food and Dietetics Laboratory of the Ministry of Health and Social Welfare to form a unified food control laboratory.

Guyana

SHS 001 (3100) Health services (1963–) R PR UNICEF—To formulate and implement a national health plan, improve the administrative structure of the Ministry of Health and train personnel.

MCH 001 (4900) Health and population dynamics (1974–) PG: USAID—To develop a comprehensive maternal and child health programme including family health, school health, nutrition and cancer control activities.

The work done under this project between 1971 and 1973 is described in the Annual Report for 1973.¹

MPD 001 (0200) Malaria eradication programme (1961–) PR

VPH 001 (0700) Veterinary public health (1972–) PR—To develop a coordinated zoonoses control programme including the establishment of a veterinary public health unit and laboratories, improve reporting and surveillance systems, and train personnel.

VBC 001 (2300) Aedes aegypti eradication (1969–) PR

DNH 001 (4400) Dental health (1972–77) R—To establish a dental health unit, expand dental services through the provision of equipment and materials, train auxiliary dental staff and promote dental health by means of educational and preventive measures.

BSM 001 (2201) Development of potable water supply, sanitary sewerage and storm drainage (1972–76) UNDP—To carry out a sector study on water supply and sewerage, including technical and economic feasibility studies for water supply, sewerage and storm drainage, in Greater Georgetown, Linden and New Amsterdam; to improve the management and administration of the Guyana water authority; and to train personnel.

Haiti

SHS 001 (3100) Health services (1957–) R PR—To develop the health infrastructure in the health districts of Les Cayes, Petit-Goave and Cap Haïtien, train health manpower, and improve the utilization of facilities of the State University Hospital.

SHS 002 (3105) Public health services (1972–) R UNDP—To develop the district of Les Cayes as an experimental area for the preparation of a system of public health services suitable for the whole country.

MCH 001 (4900) Health and population dynamics (1970–) UNFPA—To develop an integrated maternal and child health and family planning programme.

NUT 001 (4200) Nutrition (1961–77) PR PH UNICEF (FAO) (UNESCO)—To improve the nutritional status of the population through nutrition education, supplementary feeding programmes for vulnerable groups, and other measures; and to develop an integrated food and nutrition programme in certain rural areas.

HMD 001 (6200) Medical education (1968–) PR—To improve the physical facilities, the educational programme, and the system of examinations, of the faculty of medicine.

ESD 001 (0100) Epidemiology (1973) R—The part-time services of an epidemiologist, and supplies, were provided to assist with the epidemiological surveillance of yaws, with the training of personnel to develop surveillance of other diseases such as leprosy, and with programmes of immunization against tetanus and poliomyelitis.

Further assistance will be provided by the zone epidemiologist.

MPD 001 (0200) Malaria eradication programme (1961–) PR

VPH 001 (0700) Veterinary public health (1973–) PR—To establish a veterinary section that, in conjunction with the Ministry of Public Health, will be able to determine the extent of the zoonoses problems and draw up control procedures.

BSM 001 (2100) Engineering and environmental sciences (1971–) R—To carry out a programme of latrine construction in Mirebalais and neighbouring localities.

BSM 002 (2200) Water supplies (1960–) PR—To improve the water supply system of the metropolitan area of Port-au-Prince and the systems of other urban and of rural areas.

Honduras

SHS 001 (3100) Health services (1955–) R PR—To organize integrated public health services at the central and local levels, and train professional and auxiliary personnel.

SHS 003 (3105) Community health services (1972–75) R—To build up the health infrastructure and expand the integrated programme of community health in cooperation with the Social Welfare Board.

SHS 004 (4800) Medical care services (1965–) R—To improve the medical care services, including those of the social security institutions.

SHS 005 (4801) Hospital planning and administration (1973–76) PG: Inter-American Development Bank; Government of Honduras—To plan and construct the Tegucigalpa Teaching Hospital and establish an administrative structure to enable educational activities and medical care services to be integrated for the provision of hospital care; and to train professional, technical and auxiliary health personnel.

MCH 001 (4900) Intrahospital maternal and child health and family planning programme (1972–) PR—To develop maternity-centred family planning activities, increase the coverage of pre-natal services and include in them the provision of information on family planning, and increase the use of family planning services by women of childbearing age.

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, p. 218.

HMD 001 (6200) Health science education (1965-) R—To train the physicians and other staff required for the health sector in accordance with the national health plans and socioeconomic development programmes.

HMD 002 (6400) Sanitary engineering education (1965-77) PR—To improve the teaching of sanitary engineering at the University of Honduras, and the advanced professional training of personnel working in national sanitary engineering and environmental sanitation programmes.

MPD 001 (0200) Malaria eradication programme (1956-) R

VBC 001 (2300) Aedes aegypti eradication (1968-) R PR

LAB 001 (3300) Laboratory services (1967-) PR—To develop the laboratory services of the Ministry of Public Health.

BSM 001 (2100) Engineering and environmental sciences (1971-) PR—To implement programmes of basic sanitation, water supply and waste disposal in urban and rural areas.

BSM 002 (2200) Water supply and sewerage (1960-78) R—To improve and expand urban and rural water and sewerage services.

Jamaica

SHS 001 (3100) Health services (1963-) R PR—To reorganize the Ministry of Health to facilitate the management of expanded integrated services in urban and rural areas, and to decentralize the hospital services.

SHS 002 (4800) Medical care and hospital administration (1969-) R—To reorganize the hospital system, train professional and auxiliary personnel in hospital administration, and establish a national maintenance service for hospital and other health facilities.

SHS 003 (5000) Rehabilitation (1972-77) R—To establish, at the University of the West Indies, a centre for training physical therapists for the part of the Caribbean area where English is spoken.

HMD 001 (6400) Sanitary engineering education (1971-77) R—To provide short intensive courses in sanitary engineering and environmental sanitation subjects for professional, technical and auxiliary personnel.

VPH 001 (0700) Veterinary public health (1972-) R—To study and control zoonoses and improve meat hygiene.

VPH 002 (0701) Animal health (1973-75) UNDP—To develop a national animal health and veterinary public health programme with a permanent infrastructure.

MNH 001 (4300) Mental health (1964-) R PR—To decentralize and improve psychiatric care.

BSM 001 (2100) Engineering and environmental sciences (1968-) PR—To improve environmental conditions by the establishment of health standards and programming for water supply, sewerage, solid waste disposal, food sanitation, industrial health, and air, water and soil pollution control.

BSM 002 (2202) Water resources survey (1972-73) UNDP (FAO)—To establish water quality standards, guidelines for the management of water resources, and a network of monitoring stations. Provided—3 consultants, and services of the engineer assigned to project BSM 001 (2100).

In collaboration with FAO, a study was made of surface waters in various river basins. This led to the adoption of a system for surveillance of water quality, and the development of a sampling programme and of a programme for laboratory analyses. Forty

water quality stations were established and sampling was initiated. The programme of analyses included analyses of biochemical oxygen demand and bacteriological examinations of coliform and faecal organisms. Results of the sampling suggested that many streams and rivers, particularly along the north coast and around Negril, are contaminated. Rivers analysed for dissolved oxygen and biochemical oxygen demand, apart from the Rio Cobre, showed no evidence of pollution; however, sugar and citrus factories located in other river basins were not in operation during the sampling period. It was recommended that routine sampling and analysis should continue as part of an islandwide quality monitoring network.

SES 001 (2204) Water and sewerage services administration (1973-) R—To improve the operation of the National Water Authority and the Water Commission.

FSP 001 (4700) Caribbean regional drug testing laboratory (1974-) PR—To establish, in Kingston, a drug testing laboratory for the Caribbean area, able to perform microbiological and pharmacological testing of drugs and thus complementing the area's existing national laboratories, which test drugs only by chemical procedures.

DHS 001 (6700) Biostatistics education (1974-) PR—To develop, at the College of Arts, Science and Technology, Kingston, a programme to prepare English-speaking personnel from the Caribbean area at the first level of trained specialist in health records and statistics.

2500 Air pollution (1967-73) PR—To study the air pollution situation in order to establish a control programme. Provided—advisory services of staff of other projects and supplies and equipment for air pollution monitoring.

In 1967 a monitoring station was installed in Kingston as part of the Pan American Air Pollution Sampling Network. Air was analysed for 3 parameters: settleable dust, suspended dust, and sulfur dioxide content. Operation of the station was interrupted in October 1969.

Owing to administrative and operational difficulties, the station was not put back into operation. The project has been integrated into the general environmental services of the Ministry of Health and Environmental Control.

6600 Dental education (1966-73) R PR UNICEF—To train auxiliary personnel (20 a year) for providing dental care to all schoolchildren within a 10-year period. Provided—a consultant every year between 1968 and 1973, and 2 fellowships.

In 1968 a consultant helped to draw up the curriculum for the project. In 1969 assistance was provided in connexion with the design of the building for the training school, equipment, the planning of the children's dental service, and necessary changes in legislation. The Organization also cooperated in attempts to obtain assistance for initial teaching and administrative personnel through the United Kingdom Overseas Development Administration in Jamaica.

The building was completed in 1970 and the first class of 25 students was enrolled. A director, a dental lecturer, and 2 sister tutors were provided under the agreement between the United Kingdom and the Government, and the Organization assisted in organizing the curriculum.

In 1971 a consultant helped to develop the training programme and the children's dental service, and to draw up appropriate legislation for the work of the dental auxiliaries. In 1972 a further consultant assisted in conducting examinations for the first graduating class. In 1973 assistance was provided in reviewing the curriculum and in establishing a permanent local examining board to supervise graduation of auxiliaries at the end of the 2-year training period.

Mexico

SHS 001 (3100) Health services (1966-) R PR—To improve the health services and extend them to the rural population and marginal groups in the cities, train technical and auxiliary health personnel, and develop health planning in the context of socio-economic development planning.

SHS 002 (3107) Health services, Chiapas (1971-) PR—To improve the health and nutritional status of vulnerable groups of the population, as part of the overall social and economic development process.

SHS 003 (3108, formerly AMRO 3108) Public health services, United States/Mexico border (1952-) PG: United States/Mexico Border Public Health Association—To cooperate in the joint study and planning of health activities along the United States/Mexico border; promote the exchange of epidemiological information between the two countries; and carry out the duties of secretariat of the United States/Mexico Border Public Health Association (joint project with United States of America SHS 002 (3108)).

SHS 005 (5000) Rehabilitation (1972-77) R—To plan and implement a programme for training medical and allied personnel to staff physical, vocational and social rehabilitation services.

SHS 006 (3600) Administrative methods and practices in public health (1974-) PR—To improve the structure, standards, administrative organization and procedures of the public health services; and, in the process of carrying out administrative reform in the health sector, to ensure that efficient use is made of available resources.

MCH 001 (4900 and 4901) Health and population dynamics (1972-73) PK (University of Wisconsin, USA)—To study the feasibility of conducting a research project to determine the effect of demographic changes in national institutions in a Mexican community. Provided—advisory services by staff of the zone project AMRO 4902 and a grant.

The design of the project, to be carried out in Huixquilucán and to cover anthropological, social, health and population aspects, was completed and submitted to the Government, which later requested funding assistance from USAID and UNFPA for future activities.

HMD 001 (6100) Health manpower development (1954-70; 1973-77) R PR—To develop a programme for the training of health manpower in various professions and at various levels.

HMD 002 (6233) Latin American Centre of Educational Technology for Health (1972-78) R PR PH—To improve the teaching-learning process in education in the health sciences through the provision of services in educational technology.

HMD 003 (6300) Nursing education (1958-77) PR—To improve basic nursing education and provide advanced training in nursing education and administration and various nursing specialties.

HMD 004 (6400) Sanitary engineering education (1961-77) R PR—To strengthen environmental engineering education at the undergraduate and postgraduate levels and to conduct training programmes for staff of official agencies in charge of environmental sanitation programmes.

HMD 005 (6200) Medical education (1959-73) R PR—To strengthen medical education, particularly as regards preventive and social medicine, the basic sciences, and medical pedagogy. Provided—consultants, advisory services by staff members, 60 fellowships, and supplies and equipment (audiovisual material,

microscopes and physiographs to various schools of medicine, and complete installations for a workshop for production of audiovisual material to the National University).

A postgraduate training centre for instructors was established at the University of Nuevo León with financial aid from the Kellogg Foundation. A Health Science Institute was organized. With technical assistance from the Regional Library of Medicine and the Health Sciences, São Paulo (Brazil), a national biomedical and sociomedical information centre was set up by combining basic science resources of the Universities of Nuevo León and San Luis Potosí. Improvements were made to hospital administration and medical archives and records at these Universities and that of Coahuila.

Human relations and medical pedagogy laboratories were organized under a joint programme of the Health Ministry and the Mexican Association of Schools of Medicine. Medical education seminars and round-table discussions were held in Veracruz, Tehuacán and Guanajuato. Advice was given on the establishment of medical education offices in the country's other schools of medicine. Two 8-week workshops were conducted for 40 professors.

The manpower situation was reviewed and a project for decentralization was prepared at the National University, which established its medical education office and designed educational models. Advisory assistance was provided in connexion with the organization of a survey of teaching resources.

By the time the project ended the groundwork had been laid for installing the Latin American Centre of Educational Technology for Health, and for setting up a scheme for development of human resources in all the health sciences.

MPD 001 (0200) Malaria eradication programme (1956-) R PR

VPH 001 (0700) Zoonoses control (1966; 1970-) R—To plan and implement programmes for the control of zoonoses, especially brucellosis, rabies and bovine tuberculosis.

VPH 002 (0710) Rabies control, Mexico/United States border (1966-77) PR PG: US Public Health Service Center for Disease Control

VPH 003 (6500) Veterinary medical education (1969-) R—To develop the teaching of preventive medicine and public health in the schools of veterinary medicine.

IMM 001 (3301) Immunology research and training centre (1968-78) PR—To develop the centre, which carries out research, trains personnel, publishes scientific documents, and coordinates the activities of the various laboratories participating in the country's immunology programme.

ISB 001 (3302) Production of oral poliomyelitis vaccine (1968-) R PR—To increase the production of live poliomyelitis vaccine at the National Institute of Virology to meet the needs of the Latin American countries.

ISB 002 (3303) National health laboratories (1970-78) UNDP—To modernize the national health laboratories responsible for the production of vaccines and sera, control of food and drugs, diagnosis of infectious diseases, training of personnel and research into public health problems.

BSM 001 (2102) Improvement of the environment (1973-77) UNDP—To coordinate programmes for the improvement of the environment and for the prevention and control of contamination.

BSM 002 (2200) Water supply and sewerage (1960-77) R PR—To provide water supply and sewerage services to 80% of

the urban population, excluding the Federal District, and to 35% of the rural population.

CEP 001 (2100) Environmental pollution control (1972-77) PR—To control air, water and soil pollution, and to train the necessary personnel.

6600 Educational technology in dentistry (1974-77) PH—To establish a programme in educational technology related to dentistry and produce appropriate materials in the languages of the Region.

Netherlands Antilles

HMD 099 (3101) Fellowships R

VBC 001 (2300) Aedes aegypti eradication (1969-) PR

Nicaragua

SHS 001 (3100) Health services (1963-) R UNDP UNICEF (FAO) (UNESCO)—To improve health legislation and the structure and administration of the Ministry of Public Health, improve and extend the health services, and train personnel.

SHS 002 (3102) Emergency relief and rehabilitation services (1973-74) PR PG: UNESCO; UNICEF; Organization of American States; Government of Thailand; Government of the United Republic of Cameroon; Private donor—To prevent the onset of epidemics following the Managua earthquake. Provided—equipment and drugs and other supplies.

Specific drugs (mostly against diarrhoea), antibiotics and first aid supplies were provided in sufficient quantity to prevent epidemics among the displaced population. In addition, equipment and reagents were provided to the National Water Supply and Sewerage Department and to the University's sanitary engineering laboratory for analysing the quality of public water supplies after the earthquake and during the rehabilitation period.

SHS 003 (4800) Medical care services (1972-) R PG: Government of Barbados—To plan and develop a health care system for the whole country, giving priority to meeting requirements in Managua following the 1972 earthquake.

SHS 004 (4803) Rehabilitation of hospitals (1974-) UNDP—To organize hospital administration and set up a maintenance and equipment department during the phase of reconstruction of hospital services in Managua.

SHS 008 (3300) Laboratory services (1967-) PR—To improve and develop the health laboratory services and to train personnel.

NUT 001 (4200) Nutrition (1972-) R—To plan and organize training in nutrition at the national level.

HMD 001 (6200) Medical education (1965-) R—To strengthen medical education by improving the training of teachers of basic medical sciences and of preventive and social medicine.

HMD 002 (6400) Sanitary engineering education (1965-77) R—To strengthen sanitary engineering education and organize intensive short courses in sanitary engineering subjects.

HMD 003 (6600) Dental education (1966-77) R—To improve the training at the school of dentistry of the National University.

MPD 001 (0200) Malaria eradication programme (1957-) R PR

BSM 001 (2200) Water supply and sewerage (1962-) R—To improve and extend water supply and sewerage services.

BSM 002 (2101) Engineering and environmental sciences (1974-) UNDP—To continue basic rural sanitation programmes started after the 1972 Managua earthquake, which caused the displacement to rural areas of large numbers of the affected population.

SES 001 (2201) National water supply administration (1971-73) PW (National Water Supply and Sewerage Department) (Inter-American Development Bank)—To carry out, in the National Water Supply and Sewerage Department (DENACAL), an integrated programme of institutional and administrative reforms that would enable it to meet more efficiently the growing demands for water and sanitation services. Provided—an adviser in data processing for 9 months, 3 consultants (in organization and methods, regionalization of operations, and maintenance), advisory services by project staff, 4 fellowships (1971), contractual services, and printing costs.

Procedures were established for implementing the recommendations made as the result of a multidisciplinary project undertaken in 1968, and a manual on mechanization of the accounting and budgeting process was prepared. Integration of the data processing systems of DENACAL and the Managua Water Company was well under way when it was interrupted by the 1972 earthquake. Later, a manual covering classification of accounts, supplies and procurement controls was drawn up by DENACAL with the Organization's assistance.

The gains achieved by the previous project were consolidated by this project, and work programmes were outlined for securing further improvements (see also project Nicaragua SES 003 (2204)).

SES 002 (2202) Water supplies, Managua (1972-74) PW—To improve the Managua water supply system and strengthen its administration.

SES 003 (2204) Institutional development, National Water Supply and Sewerage Department (1974-75) PW—To improve further the organization and administration of the National Water Supply and Sewerage Department.

Panama

SHS 001 (3100) Health services (1952-) R PR UNICEF (FAO) (UNESCO)—To strengthen and extend the health services and improve their administration.

SHS 002 (3102) Community health promotion (1973) PR—To establish health committees composed of staff of the Ministry of Public Health with a view to promoting awareness of health problems in communities and enlisting their participation in raising levels of health in rural areas. Provided—a sanitary inspector specialized in rural health problems.

SHS 003 (3700) Health planning (1972-75) UNDP—To improve the national health planning system by coordinating the programmes of health institutions under a national health plan integrated into the overall socioeconomic development plan; and to train personnel.

SHS 004 (4800) Medical care services (1974-) PR—To improve and extend medical care services, particularly in rural and suburban areas.

MCH 002 (4900, formerly 4100) Maternal and child health (1971-77) R—To extend the medical care provided during pregnancy and childbirth, encourage family planning, improve the health care of children, and expand the immunization programme.

Panama (continued)

HMD 001 (6200) Medical education (1965-79) R—To improve the administration and the technical level of the school of medicine of the University of Panama.

HMD 002 (6300) Nursing education (1966-) R PH PG: USAID—To improve basic nursing education, establish post-basic and postgraduate courses in nursing specialties and prepare nurses for teaching posts.

HMD 003 (6400) Sanitary engineering education (1965-77) PR—To improve the teaching of sanitary engineering at the University of Panama and organize short intensive courses in sanitary engineering subjects.

HMD 004 (6600) Dental education (1966-77) R—To improve the teaching at the school of dentistry of the University of Panama, especially as regards the preventive and social aspects, and to train auxiliary dental personnel.

ESD 001 (0100) Epidemiology (1973-) UNDP PR—To complement the staff of the Department of Epidemiology.

MPD 001 (0200) Malaria eradication programme (1956-) R PR

VPH 001 (0800) Foot-and-mouth disease control (1974-) PR—To keep the country free from foot-and-mouth disease.

VBC 001 (2300) Aedes aegypti eradication (1969-) PR

LAB 001 (3300) Laboratory services (1970-) R—To improve and expand the laboratory services of the Ministry of Public Health.

BSM 001 (2100) Engineering and environmental sciences (1970-) PR—To strengthen the technical and administrative structure of the Department of Sanitary Engineering of the Ministry of Public Health, to plan and develop environmental sanitation programmes, and to train sanitation personnel.

BSM 002 (2200) Water supply and sewerage (1960-) PR PW—To improve the operating capacity of the water supply agency and implement national programmes for the construction of water supply and sewerage systems.

Paraguay

SHS 001 (3100) Health services (1955-) R UNDP PR UNICEF (ILO) (FAO) (UNESCO)—To plan health services at the national level and develop the health service infrastructure to permit coverage of 80% of the population by 1980.

SHS 002 (3103) Health services in developing areas (1972-77) PR UNICEF—To organize a programme of minimum rural health services, provided under a regional medical care system, to permit coverage of 80% of the rural population within 10 years.

SHS 003 (4800) Medical care services (1970-77) PR—To develop the medical care services and improve their administration; and to train staff.

MCH 001 (4900) Health and population dynamics (1971-) R PG: USAID—To improve maternal and child care in rural clinics and in the Clinical Hospital, Asunción; and to organize a residency programme in obstetrics, gynaecology and paediatrics in the faculty of medicine of the National University.

NUT 001 (4200) Nutrition (1960-66; 1971-) R—To strengthen nutrition programmes, particularly for protection of the most vulnerable population groups, through expansion of

supplementary feeding and nutrition education and training of personnel; and to coordinate the nutrition work of the health, education and extension services.

HMD 001 (6200) Medical education (1964-) PR—To strengthen medical education by promoting teaching programmes in preventive and social medicine at the undergraduate and postgraduate levels and improving teaching methods.

HMD 003 (6400) Sanitary engineering education (1967-) R—To strengthen the teaching of sanitary engineering at the faculty of engineering of the National University and organize courses in environmental sanitation subjects for professional, technical and auxiliary personnel.

HMD 004 (6600) Dental education (1966-) PR—To strengthen the teaching at the dental school of the National University, Asunción, particularly as regards the integration of preventive and social dentistry into basic and clinical courses, and to develop field training programmes for dental students.

ESD 001 (0100) Communicable disease control (1965-) PR UNICEF—To implement a communicable disease control programme integrated into the general health services.

MPD 001 (0200) Malaria eradication programme (1957-) PR

VPH 001 (0700) Veterinary public health (1968-) PR—To carry out a coordinated programme of epidemiological investigations, pilot projects and control measures for reducing morbidity and mortality from the zoonoses, especially rabies, bovine tuberculosis and brucellosis.

VPH 002 (0800) Foot-and-mouth disease control (1974-) PR PG: Government of Paraguay—To institute measures for the control of the disease.

VPH 003 (6500) Veterinary medical education (1971-77) PR—To strengthen veterinary medical education, particularly in relation to preventive medicine and public health.

CAN 001 (5101) Chronic diseases: cancer (1974-) PR—To determine the incidence and prevalence of cancer and mortality from the disease, prior to setting up a national programme of cancer control.

MNH 001 (4300) Mental health (1972-77) R—To determine the prevalence of mental illness, formulate a mental health policy, and set up the organization for its implementation, coordinating the activities of the institutions working in this field.

LAB 001 (3300) Laboratory services (1974-) R—To reorganize the central public health laboratory, expand its facilities, standardize techniques, and set up a system of information on laboratory activities.

BSM 001 (2100) Engineering and environmental sciences (1969-) PR—To develop environmental sanitation programmes, including programmes for water supply and sewerage, industrial hygiene, waste disposal, housing, and food hygiene.

DHS 001 (3500) Health statistics (1971-) PR—To improve the coverage and quality of vital and health statistics and train statistical personnel.

3104 Emergency assistance (1974) PG: Organization of American States—Funds were allocated for the purchase of 100 dwellings for the victims of floods that occurred in April 1974.

3700 Health planning (1973) PR—A course in health planning, for professional staff of the health institutions, was held in

Asunción from 17 September to 21 December 1973. It was offered as part of the Pan American health planning programme and dealt with the basic concepts of health planning, identification of problems, and determination of methods for solving them. There were 30 participants, including 4 PAHO/WHO fellows from other countries. Provided—advisory services by staff members.

Peru

SHS 001 (3100) Health services (1956–) R PR—To strengthen and extend the health services in accordance with the national health plan.

SHS 002 (3106) Health services, north-western region (1970–) R UNDP PR UNICEF—To develop and extend health services in the north-western region.

SHS 003 (3108) Health services, eastern region (1973–) R—To provide basic health services and carry out epidemiological surveillance of communicable diseases in the jungle area (Loreto, San Martín and part of Huánuco Departments).

SHS 004 (4800) Medical care services (1970–) PR—To strengthen the administrative and technical systems of the central air force hospital, and improve the organization of the country's hospital system.

SHS 005 (4804) Hospital maintenance and engineering (1974–) PR—To construct, remodel, equip and maintain health institutions, and to establish a national centre for training the required professional, technical and auxiliary personnel.

NUT 001 (4200) Nutrition (1965–) R UNICEF—To reduce the prevalence of deficiency diseases and improve the nutritional status of the population by means of supplementary feeding, nutrition education and salt iodization; to train personnel in nutrition; to organize institutional food services; and to formulate a national food and nutrition policy.

HMD 001 (6100) School of public health (1963–77) R PR—To strengthen the School of Public Health, which trains professional and middle-grade technical personnel and health auxiliaries for the public health services.

HMD 002 (6101) Regionalization of health services and of education of health personnel (1972–77) PR—To use regional installed capacity to improve the training of health personnel at the professional, intermediate and auxiliary levels; to provide continuing education and inservice training; and to improve the use of training and service resources for health care.

HMD 003 (6200) Medical education (1964–) PR—To strengthen the training of physicians at the undergraduate and postgraduate levels, improve the training of teachers, and introduce curriculum changes to place more emphasis on the preventive and social aspects of medical practice.

HMD 004 (6201) Training for instructors in biochemistry and physiology (1972–73) PH (Kellogg Foundation)—Assistance was provided in selecting and purchasing equipment for the biochemistry and physiology laboratories of the University of San Marcos.

HMD 005 (6300) Nursing education (1959–) R PR—To adjust the nursing education programme to the country's new educational structure.

HMD 006 (6302) Training of nursing auxiliaries (1974–) PR—To train a sufficient number of auxiliary nursing personnel of adequate quality to meet the health needs of the country.

HMD 007 (6400) Sanitary engineering education (1964–77) PR—To strengthen the teaching of sanitary engineering at the National University of Engineering, improve laboratory and library facilities and develop applied research projects.

HMD 008 (6600) Dental education (1969–) PR PH (Kellogg Foundation)—To review the curricula of the schools of dentistry and strengthen the teaching programmes, especially as regards the social and preventive aspects of dentistry.

ESD 001 (0100) Communicable diseases (1974–) R—To carry out communicable disease control programmes and develop the epidemiological surveillance services.

MPD 001 (0200) Malaria eradication programme (1957–) PR UNICEF

MPD 002 (1000) Chagas' disease (1970–77) R—To carry out surveys to determine the extent of infection with Chagas' disease, and to undertake clinical and epidemiological studies and vector control measures.

SME 001 (0300) Smallpox eradication (1967–) R—To protect the country against smallpox by means of systematic vaccination and epidemiological surveillance carried out by the health services.

VPH 001 (0700) Veterinary public health (1966–) R—To control brucellosis in goats in the Departments of Lima and Ica and the Province of Callao; and to reduce the incidence of the disease in man.

VPH 002 (0701) Rabies control (1970–78) R—To control human rabies, first in Lima and Callao and later in the rest of the country.

VPH 003 (0702) Hydatidosis control (1973–77) R—To carry out a pilot programme of hydatidosis control in the central sierra, and extend it eventually to the rest of the country.

VPH 004 (0800) Foot-and-mouth disease control (1974–) PR—To organize campaigns against foot-and-mouth disease.

VPH 005 (6500) Veterinary medical education (1965–) R—To strengthen veterinary education and adjust the university curricula to the country's requirements.

VBC 001 (0900) Plague control (1963–77) R—To carry out epidemiological studies of plague and implement a control programme.

RAD 001 (4500) Radiation protection (1968–77) R—To establish a national radiation protection programme.

LAB 001 (3300) Laboratory services (1973–) PR—To improve and extend laboratory services, developing diagnostic and research work and expanding the production and control of biological products; and to train the necessary personnel.

BSM 001 (2100) Engineering and environmental sciences (1968–) PR—To plan and carry out environmental sanitation work including the establishment and improvement of water and sewerage systems, waste disposal, air and water pollution control, housing and urbanization, food sanitation, and training of engineers and auxiliary personnel.

BSM 002 (2200) Water supply and sewerage (1960–) R—To extend water supply and sewerage facilities.

CEP 001 (2500) Air pollution (1967–) PR—To determine air pollution levels, plan control measures, and train professional and auxiliary personnel for their implementation.

Peru (continued)

HWP 001 (4600) Occupational health (1971-) R—To improve the working environment of the labour force by assistance to the Institute of Occupational Health, Ministry of Public Health.

SES 001 (2203) Water and sewerage services administration (1972-77) PR PW—To carry out studies for the organization of water supply companies in Trujillo and Ica, develop rate systems for making the facilities self-financing, and train personnel.

Surinam

SHS 001 (3100) Health services (1956-77) PR—To improve and extend the health services in accordance with the national health plan, improve their administration, and train health personnel.

HMD 001 (6200) Medical education (1967-) PR—To strengthen and improve medical education at the University of Surinam, Paramaribo.

HMD 002 (6300) Nursing education (1974-) R—To strengthen the organization and administration of nursing schools at the auxiliary, professional and postbasic levels; to adapt curricula to the needs of the health sector and the sociocultural situation; and to train nurse tutors.

MPD 001 (0200) Malaria eradication programme (1957-) R

MPD 002 (1000) Schistosomiasis (1973-) R—To control schistosomiasis in all areas where the disease is prevalent.

VPH 001 (0700) Veterinary public health (1971-) PR—To develop measures for the control of zoonoses and set up a veterinary laboratory.

VBC 001 (2300) Aedes aegypti eradication (1969-) PR

BSM 001 (2100) Engineering and environmental sciences (1971-) PR—To plan and implement a general environmental sanitation programme and a rural water supply programme.

BSM 002 (2200) Water supply and sewerage (1964-65; 1969-74) R UNDP UNICEF (UN) (Government of Surinam)—To carry out investigations, planning and designs for piped water supply and sewerage systems for communities in the lower Surinam River basin (excluding Paramaribo) and the heavily populated coastal area, as well as for selected inland communities. In August 1972 a general study of drainage problems in the urban areas of New Nickerie and Albina, and the definition of a long-range policy for urban drainage, were added to the original project objectives. Provided—a sanitary engineer/project manager, 2 sanitary engineers and a secretary, consultants, 4 fellowships and supplies and equipment. The United Nations provided a hydrogeologist and a drilling superintendent, and 2 fellowships.

The complete designs and specifications for water supply for the project area were prepared. Bilateral assistance was obtained from the Netherlands and construction was started in several areas. The Government drew up a programme for providing water to several rural communities of the coastal area and construction was begun, with financing from the national budget and assistance from UNICEF. Sewerage systems were designed for several communities.

SES 001 (2201) Rural water supply (1974-) R—To plan and construct water supply systems in 9 rural communities and train the necessary manpower.

Trinidad and Tobago

SHS 001 (3100) Health services (1968-) R PR UNICEF—To improve the planning and organization of the health services.

ESD 001 (0100) Epidemiology (1969-) R—To organize and develop programmes of epidemiological surveillance of diseases and to train staff in communicable disease control measures.

VPH 001 (0700) Veterinary public health (1971-) R—To develop veterinary public health work as part of the programme of the Ministry of Health, and train the necessary professional and auxiliary staff.

VPH 002 (0800) VII Inter-American Meeting on Foot-and-Mouth Disease and Zoonoses Control, Port-of-Spain (17-20 Aug. 1974) PG: Government of Trinidad and Tobago—Discussion at the meeting, which was at the ministerial level, centred on improvement of animal nutrition in the tropics, the importance of parasitic diseases, the improvement of inspection services in slaughterhouses, and achievement of the targets of the Ten-year Health Plan for the Americas.

LAB 001 (3314) Trinidad Regional Virus Laboratory (1969-84) PR—To develop a programme for surveillance of virus diseases in the Caribbean area.

BSM 001 (2100) Engineering and environmental sciences (1969-) PR—To reorganize the environmental health services of the Ministry of Health and train professional and auxiliary personnel for environmental sanitation work.

DHS 001 (3500) Health statistics (1969-) R—To establish, in the Ministry of Health, a health statistics system to provide data for use in planning, evaluating and operating the health services.

United States of America

SHS 001 (3100) Consultants in specialized fields (1958-) R—To provide consultant services on specialized problems in public health.

SHS 002 (3108, formerly AMRO 3108) Public health services, United States/Mexico border (1952-) R PR—To cooperate in the joint study and planning of health activities along the United States/Mexico border; promote the exchange of epidemiological information between the two countries; and carry out the duties of secretariat of the United States/Mexico Border Public Health Association (joint project with Mexico SHS 003 (3108)).

NUT 001 (4225) Graduate course in public health nutrition (1969-75) R (University of Puerto Rico)—To develop a master's degree course in public health nutrition at the School of Public Health of the University of Puerto Rico.

HMD 099 (3103) Fellowships R PR

Uruguay

SHS 001 (3100) Health services (1955-) R PR UNICEF—To develop the health services in accordance with a national health plan, reorganize their technical and administrative structure at the national, regional and local levels, and train the necessary health personnel.

SHS 003 (3200) Nursing services (1972-) UNDP PR—To identify nursing problems, improve nursing services, and train personnel.

SHS 004 (4800) Medical care and hospital administration (1966–) R UNDP—To reorganize and improve the medical care and hospital services and train personnel.

MCH 001 (4900) Health and population dynamics (1972–73) PR PG: USAID—To reduce maternal and child morbidity rates through the expansion and improvement of services for mothers and children. Provided—6 consultants, advisory services by the PAHO/WHO country representative and other staff, 8 fellowships, supplies and equipment, a grant, common services, and local costs.

A work plan was prepared for strengthening the maternal and child health department, rationalizing its activities and making better use of resources. Technical and administrative guidelines were laid down for the maternal and child health programme and seminars and courses on human reproduction and maternal and child health care were held. A protocol was designed for an epidemiological investigation of abortion, aimed at updating medical records of births and deaths and carrying out a survey of a representative sample of the population.

A 4-year project for extending activities with assistance from UNFPA was prepared and submitted to the Government.

HMD 001 (6100) Training of health personnel (1971–77) PR—To provide training (short courses, seminars and working groups) for staff with technical and administrative responsibilities in the health services.

HMD 002 (6201) University of the Republic (1971–) R—To strengthen the programme of the various schools of the University of the Republic, specifically with regard to the teaching of medicine, veterinary medicine, odontology, chemistry, pharmacy, and engineering.

HMD 003 (6400) Sanitary engineering education (1965–77) R—To improve the teaching of sanitary engineering in the regular civil engineering courses and implement a programme of applied research and of short courses for the continuing education of professional sanitary engineering personnel.

HMD 004 (6103) Study of human resources (1974–) PR—To make a study of the numbers and quality of available health personnel and of their geographical distribution.

ESD 001 (0100) Epidemiology (1972–78) PR—To improve the control of communicable diseases within the regular health programmes, and promote the epidemiological approach to the problems of cardiovascular diseases, tumours, and accidents.

MPD 001 (1000) Chagas' disease (1966; 1968–77) R—To carry out a programme, based on the systematic spraying of houses with insecticides, for the control of Chagas' disease.

SME 001 (0300) Smallpox eradication (1967–) R—To keep the country free from smallpox by a programme of vaccination and epidemiological surveillance measures.

VPH 001 (0702) Hydatidosis control (1971–77) PR—To expand and intensify the hydatidosis control programme.

OCD 001 (5100) Chronic diseases (1971–75) PR—To strengthen the work of the Institute of Rheumatology of the Ministry of Public Health; to organize a programme for the control of chronic diseases, including the detection and treatment of early cancer and community control of hypertension, stroke and rheumatic fever; and to provide comprehensive medical care to patients suffering from chronic diseases.

OCD 002 (4804) Gerontology (1974–) PR—To plan and carry out an epidemiological survey on the provision of services to the elderly.

DNH 001 (4400) Dental health (1973–) PR—To determine the extent of oral disease in the country and the human and material resources available for dealing with the problem.

MNH 001 (4300) Mental health (1965–77) PR—To improve the statistical information on mental health problems, draw up a mental health programme and train personnel.

LAB 001 (3300) Laboratory services (1971–) PR—To organize a national system of health laboratory services.

BSM 001 (2100) Engineering and environmental sciences (1968–) PR—To plan and implement environmental sanitation programmes and train personnel.

BSM 002 (2200) Water supply and sewerage (1966–77) PR—To plan and implement national water supply and sewerage programmes.

HWP 001 (4600) Industrial hygiene and safety (1967–77) PR—To improve the assessment and control of hazards affecting the health of workers.

DHS 001 (3500) Health statistics (1965–) R—To improve the health statistics system and train the necessary staff.

Venezuela

SHS 001 (3100) Consultant services in health (1964–) R PR—To improve the administration and organization of the health services and extend their coverage; and to train health personnel.

SHS 002 (3200) Nursing services (1972–) PR—To prepare and implement a long-term plan for the delivery of nursing care, including the preparation of the necessary personnel, in accordance with the country's health policy and its socioeconomic situation.

SHS 003 (3600) Administrative methods and practices in public health (1972–) R PR—To improve the administration of the health services and prepare relevant legislation.

SHS 004 (4800) Medical care services (1966–) R—To coordinate the medical care services provided by the hospitals and health centres, extend medical care facilities, and train the necessary personnel.

SHS 005 (4804) National system for maintenance and engineering of health care facilities (1972–75) UNDP PR—To develop a national system of engineering and maintenance of hospitals and other health care facilities.

SHS 006 (5000) Rehabilitation (1967–77) R—To strengthen and develop rehabilitation services and train personnel, including orthotics and prosthetics technicians.

NUT 001 (4200) Nutrition (1965–) R—To establish a national food and nutrition policy; to strengthen programmes (supplementary feeding, salt iodization, iron supplementation, and nutrition education) for improving the nutritional status of the population; and to train personnel.

HMD 001 (6100) School of public health (1961–77) R—To develop the school and improve its programmes of study.

HMD 002 (6200) Medical education (1958–78) R PR—To improve programmes for the teaching of medicine to bring them into line with the country's health needs, improve the administration of the schools of medicine, and develop undergraduate, postgraduate and continuing education programmes.

Venezuela (continued)

HMD 003 (6300) Nursing education (1973-) R—To establish a system for training nurses in line with the general educational system and adapted to the socioeconomic and cultural situation in the country.

HMD 004 (6401) Environmental pollution control research centre (1971-75) UNDP—To establish a comprehensive research programme on protection of the environment and improvement of environmental conditions, and to develop and coordinate human and material resources for the purpose.

HMD 005 (6600) Dental education (1966-) R—To train auxiliary dental personnel and strengthen the programme for the teaching of dentistry, particularly as regards the preventive and social aspects.

MBD 001 (0400) Tuberculosis control (1974-77) PR—To develop a methodology for the operational and technical evaluation of an integrated programme of tuberculosis control, covering immunization, case-finding and treatment.

VPH 001 (0700) Veterinary public health (1972-) R—To plan and implement national programmes for the prevention and control of zoonoses and conduct programmes of continuing education for professional veterinary workers.

VPH 002 (0701) Venezuelan equine encephalitis (1971-77) PR—To carry out epidemiological investigations of Venezuelan encephalitis and develop a stable and effective vaccine.

VPH 003 (0800) Foot-and-mouth disease control (1974-) PR—To carry out coordinated foot-and-mouth disease control campaigns in various areas of the country.

VPH 004 (6500) Veterinary medical education (1966-) R—To improve the teaching of veterinary medicine, especially as regards preventive medicine and the basic veterinary sciences.

VBC 001 (2300) Aedes aegypti eradication (1958-) PR

DNH 001 (4401) Dental materials centre (1969-75) R—To develop training and research, and the quality control and standardization of dental materials, at the Centre for Dental Materials established in the School of Dentistry of the Central University, Caracas, in 1969.

MNH 001 (4301) Occupational therapy and mental health (1973-) R—To modernize the mental health services, develop a national mental health programme and train the necessary personnel.

RAD 001 (4500) Radiation protection (1970-) R—To plan and implement a national radiation protection programme.

LAB 001 (3300) Laboratory services (1974-) PR—To improve the national laboratory services and train personnel.¹

LAB 002 (3301) National Institute of Hygiene (1964-77) UNDP—To improve the organization and programmes of the Institute.

CEP 001 (2500) Air pollution (1967-) PR—To carry out investigations for the determination of air pollution levels.

SES 001 (2200) Water supply and sewerage (1960-) PR PW—To reorganize the National Institute of Sanitary Works.

ICD 001 (6707) Latin American Centre for Classification of Diseases (1974-) R—To study problems related to medical

certification of cause of death, and to provide instruction in the use of the International Classification of Diseases for both morbidity and mortality.

0300 Smallpox eradication (1972-) PR—To keep the country free from smallpox and strengthen the epidemiological surveillance service.

West Indies

SHS 001 (3100) Health services (1969-) R PR—To formulate and implement health programmes as part of plans for socioeconomic development in the islands of the eastern Caribbean.

SHS 002 (3101) Health services, Leeward Islands (1973-) R—To establish, in each of the states of the Leeward Islands, an efficient health administration in accordance with the needs of the country.

SHS 005 (4800) Medical care and hospital administration (1969-) UNDP—To improve the medical care services in order to achieve the highest possible levels of patient care and operational efficiency.

SHS 006 (4812) Hospital administration, Antigua (1972-75) UNDP—To reorganize the administrative structure and management of the Holberton Hospital and train personnel in hospital administration.

SHS 011 (3600) Management of health services (1974-) R—To develop a health policy based on the goals of the Ten-year Health Plan for the Americas, and determine priorities.

MCH 002 (4901) Family planning programme, St Kitts/Nevis (1971-76) UNFPA—To develop an integrated maternal and child health and family planning programme.

MCH 003 (4903) Family planning programme, Dominica (1972-75) UNFPA—To provide family planning information and services in hospitals and health centres, as part of a comprehensive maternal and child health programme.

MCH 004 (4902) Health and population dynamics, St Vincent (1974-) UNFPA—To strengthen the maternal and child health programme, and to make family planning services available to all individuals on a voluntary basis, through the provision of family planning care in the health services, the training of health and community workers, and community education activities.

NUT 001 (4200) Nutrition (1962-) R UNICEF (FAO) (UNESCO) (University of the West Indies)—To improve the nutritional status of the population of the islands of the eastern Caribbean through applied nutrition programmes, nutrition education programmes and the development of nutrition services.

HMD 001 (6302) Training of nursing assistants, Cayman Islands (1971-74) UNDP—To train 30 auxiliary nurses in three years, through an annual 9-month inservice programme, to work as members of the health team in both preventive and curative fields.

HMD 003 (6303) Development of nursing manpower, Turks and Caicos Islands (1974-77) UNDP—To provide a continuous inservice education programme for all categories of nursing personnel, as well as fellowships in certain nursing specialties.

VBC 001 (2300) Aedes aegypti eradication (1969-) R—To eradicate *Aedes aegypti* from Anguilla, Antigua, the British Virgin Islands, the Cayman Islands, Dominica, Grenada, Montserrat, St Kitts/Nevis, St Lucia and St Vincent.

¹ For work carried out under this project between 1966 and 1972, see *Off. Rec. Wld Hlth Org.*, 1974, No. 213, p. 225.

MNH 001 (4300) Mental health (1969-) PR—To plan and develop mental health services.

BSM 001 (2101) Engineering and environmental sciences, Montserrat (1972-75) UNDP—To train public health inspectors for the island at the School of Public Health, Jamaica.

BSM 003 (2103) Solid wastes, St Lucia (1973-75) UNDP—To plan and institute efficient methods for the collection and disposal of solid wastes, and develop the agency in charge of this service.

BSM 005 (2200) Water supply and sewerage (1962-74) UNDP—To improve and extend water supplies in the islands of the eastern Caribbean and improve the administration and operation of the systems.

DHS 001 (3500) Health statistics (1970-) PR—To develop health statistics services in the eastern Caribbean islands and train the necessary staff.

DHS 002 (3501) Health statistics and medical records, Turks and Caicos Islands (1974-) UNDP—To establish a medical records unit in the general hospital that serves the islands and in clinics.

3106 Health services, St Vincent (1968-73) UNICEF—To strengthen the administrative structure of the health services and integrate all health work, preventive and curative, into one service. Provided—technical advisory services by regional headquarters and project staff members.

Some progress was made in reorganizing district health work into a main health centre staffed by a public health nurse and provided with medical guidance.

A Nutrition and Child Health Committee was set up and, although statistics to allow a proper evaluation to be made are not available, there is evidence that the incidence of protein deficiency malnutrition was reduced. Community education work in nutrition was carried out. Preliminary plans were made for integrating family planning into the health care system. A major maternal and child health and family planning project was submitted to UNFPA for approval.

A poliomyelitis epidemic in 1971/72 was controlled. Some work was done on the control of tuberculosis, diphtheria, whooping-cough, tetanus, and smallpox. The *Aedes aegypti* eradication programme was moderately successful, and no cases of dengue or yellow fever were reported.

The services of a trained hospital administrator were secured through the British Development Division. A study of the physical structure of the Kingstown hospital led to a recommendation that a new hospital be constructed. An appropriate site was found and discussions took place between the Government and the European Development Fund on the possibilities of financing the construction.

Two candidates were trained in the Clarke Institute of Psychiatry in Toronto, Canada, and began a community psychiatric programme.

A study of the island's laboratory services was included in a survey carried out in the Caribbean area under the auspices of the Organization.

The population served by water supplies is 16 000 (90%) in the urban areas (Kingstown) and 66 000 (78%) in the rural areas. The Kingstown supply is now chlorinated. A sewerage system for Kingstown was designed and a national coordinator for solid waste management was appointed; 13 000 latrines were installed, school sanitation was improved, and 29 communal services were built.

Appreciable progress was made in the collection of vital and health statistics.

It will be necessary to continue activities in hospital administration, health education, maternal and child health and nutrition and for these assistance will be provided by the Barbados office, specific West Indies or intercountry projects, and the Caribbean Food and Nutrition Institute.

4809 Hospital administration, Cayman Islands (1972-73) UNDP—To establish a system for the requisitioning, storage and dispensing of drugs and other medical supplies at the Georgetown General Hospital and outlying clinics. Provided—a dispenser, a consultant (1973) and advisory services by staff members.

Following the appointment of an administrator of personal health services to the General Hospital, job descriptions and draft legislation for reorganized personal health services were prepared. A new hospital laundry was installed and food services were reorganized.

The dispenser established new procedures for requisitioning, storing and dispensing medical supplies, supervised the operation of the dispensary, and subsequently provided 3 months' guidance to the national pharmacist who took up duty in July 1973. A health formulary was introduced. Studies were undertaken for updating requisitioning procedures, which, however, could not be fully implemented pending construction of a new dispensary and medical stores.

Intercountry Programmes (AMRO)

SHS 001 (3000) Coordination with foundations (1973-) PR PH—To cooperate with foundations and other charitable organizations in mobilizing resources for health and education, the nature of the projects supported depending upon the interests of the particular donor.

SHS 002 (3110) Coordination of medical research (1962-) PR PG: Commonwealth Fund—To develop and implement a biomedical research programme in fields directly relevant to health problems of the Region; to promote cooperation among biomedical scientists of different countries in order to make the best possible use of existing resources for research and research training; to strengthen biomedical communications and resources; and to improve the returns from health expenditure through the application of operations research methods to the planning and administration of health programmes.

SHS 003 (3125) Special seminars, Zone III (1970-) PR—To cooperate with the countries of the zone in arranging seminars and meetings of working groups in various public health disciplines to analyse the relevant problems and activities and make recommendations to the Central American Public Health Council.

SHS 004 (3126) Operations research (1970-) R PR—To promote the application of the concepts and methodology of operations research to the solution of health problems.

SHS 005 (3129) Research training in biomedical sciences (1969-) PG: Wellcome Trust—To provide research training in the biomedical sciences, within the Region, for workers from countries of Latin America and the Caribbean area.

SHS 006 (3131) Caribbean Health Ministers' Conference (1970-) R PR—To assist the countries of the Caribbean area in the establishment of a secretariat for conferences of the Ministers of Health.

SHS 007 (3135) Development of river basins (1972-) PR—To collaborate with governments in the development of river basins by providing advisory services on the study of costs and benefits, on the potential dangers to health arising from the

Intercountry Programmes (AMRO) (continued)

development of water resources, on the protection and promotion of health, especially of the labour force and of families in the basin areas, and on the determination of technico-economic models of development.

SHS 008 (3139) PAHO research grants programme (1973-) PR—To support individual investigations and research training schemes in fields directly relevant to health problems in the Americas; to develop multinational programmes aimed at the best possible use of existing resources in the Region; and to support cooperative efforts in research and training.

SHS 012 (3145) Preparation for emergency situations (1973-) PG: UN Association of the USA—To collaborate with Member governments in the establishment, within their national health services, of emergency measures to cope with natural disasters.

SHS 013 (3200) Nursing services, interzone (1968-) R PR; **SHS 014 (3201) Zone I (1959-)** PR; **SHS 015 (3202) Zone II (1963-)** PR; **SHS 016 (3203) Zone III (1963-)** PR; **SHS 017 (3204) Zone IV (1952-)** PR; **SHS 018 (3206) Zone VI (1963-)** PR—To assist countries in the planning, organization and administration of nursing services, in developing educational programmes for professional and auxiliary nursing and midwifery personnel, and in carrying out research on nursing.

SHS 0019 (3210) Hospital nursing services (1966-71; 1974-) R—To improve the quality of nursing care, especially in surgical services.

SHS 021 (3214) Programming for nursing (1971-) PR—To assist countries in developing a planning process for nursing consistent with national health and education policies and plans.

SHS 022 (3216) Standards for nursing care (1972-) R—To assist with the establishment, by Mexico and the Central American and Caribbean countries, of standards of nursing care.¹

SHS 025 (3222) Technical Advisory Committee on Nursing (1973-) R—To analyse and evaluate the current situation in order to make recommendations for planning nursing care programmes in rural areas, nursing services in connexion with communicable disease control, and research in clinical areas of nursing and nursing administration.

SHS 026 (3223) Systems of nursing (1973-) R PR—To assist countries of the Region in defining their systems of nursing.

SHS 027 (3225) Utilization and training of traditional birth attendants (1974-) R—To determine new approaches that would permit rational use of traditional birth attendants in maternal, infant and family welfare work, and to select the most suitable method of training them.

SHS 028 (3600) Administrative methods and practices in public health, interzone (1959-) PR; **SHS 029 (3601) Zone I (1968-)** PR; **SHS 030 (3603) Zone III (1967-)** PR; **SHS 031 (3604) Zone IV (1971-)** PR—To assist countries in improving the administrative practices of their national health services.

SHS 033 (3607) Management of health services (1972-) UNDP—To assist governments in improving the management and administration of health services; and to train health administration officials.

SHS 034 (3700) Health planning, interzone (1961-) R PR; **SHS 035 (3701) Zone I (1965-)** R PR; **SHS 036 (3702) Zone II (1971-)** R; **SHS 037 (3703) Zone III (1966-)** PR; **SHS 038 (3704) Zone IV (1972-)** PR; **SHS 039 (3706) Zone VI (1963-)** PR—To collaborate with governments in the establishment, development and strengthening of health planning processes as part of national development plans, in the development of joint Organization/country programming and health information systems, and in the training of personnel.

SHS 040 (3715) Pan American programme for health planning (1968-77) UNDP—To contribute to the establishment and strengthening of health planning processes through training, research and provision of information.

SHS 041 (4800) Medical care services, interzone (1961-) R PR; **SHS 042 (4801) Zone I (1970-)** R PR; **SHS 043 (4802) Zone II (1973-)** PR; **SHS 044 (4803) Zone III (1962-77)** PR; **SHS 045 (4804) Zone IV (1963-)** PR—To assist countries in the improvement of medical care services, particularly as regards coordination of services and hospital administration, and in the solution of general medical care problems.

SHS 047 (4813) Hospital planning and administration, interzone (1968-) PR—To assist countries in improving hospital and medical care facilities, in establishing maintenance programmes, and in planning new facilities to meet the increasing demand for services.

SHS 048 (4815) Training for medical care and hospital administration, interzone (1967-) PR—To develop the programmes of training in administration of medical care and hospital services at schools of public health, schools of medicine and other institutions in Latin America.

SHS 049 (4816) Progressive patient care (1967-) PR PH—To assist in setting up, in Latin American university hospitals, intensive care units that will also serve for demonstration and teaching purposes.

SHS 053 (5000) Rehabilitation, interzone (1962-) R PR—To advise countries of the Region on problems of medical rehabilitation, and assist in the development of rehabilitation services and in the training of personnel.

SHS 057 (3710) Development of national information systems (1974-) PR—To design and develop national information systems for the health sector, in keeping with those for economic and social development and with the specific needs of the planning process of each country.

MCH 006 (4900) Health and population dynamics, interzone (1968-) UNFPA PR PG: USAID—To assist governments in the development of activities relating to the health aspects of population dynamics.

MCH 007 (4901) Health and population dynamics, Zone I (1968-) R UNFPA PG: USAID; **MCH 008 (4902) Zone II (1972-)** PR; **MCH 009 (4903) Zone III (1972-)** UNFPA; **MCH 010 (4906) Zone VI (1972-)** PR PG: USAID—To assist countries in the development of family planning programmes as part of health services and, in particular, integrated into maternal and child care activities.

MCH 011 (4909) Education and training in health and population dynamics, interzone (1971-) UNFPA PG: USAID—To assist in the training of personnel in health and population dynamics to meet the needs of the programmes in this field.

MCH 016 (4920, formerly 4126) Latin American Centre for Perinatology and Human Development (1972-) R PR PH PG:

¹ For work carried out under this project in 1972 and 1973, see *Off. Rec. Wld Hlth Org.*, 1974, No. 213, p. 229.

Ford Foundation—To provide support for the Centre, which carries out scientific research on fetal and infant development, offers training for research and teaching in maternal and child health, and provides advisory services on perinatal problems to the countries of the Region.

MCH 017 (4923) Maternal and child health development (1974–) PR PH—To provide inservice training for all members of the health team through the use of a network of schools of health sciences and of the health services of selected communities; and to carry out operational and epidemiological studies leading to improved teaching and health care delivery programmes.

MCH 018 (4915, formerly 4100) Maternal and child health, interzone (1971–) R PR—To assist governments in the development of integrated maternal and child health programmes, including fertility regulation activities when requested, and in the progressive extension of such programmes to rural areas.

MCH 019 (4917, formerly 4108) Clinical and social paediatrics (1961–) PG: UNICEF—To provide fellowships for training in clinical and social aspects of paediatrics at the regional training centres in Santiago, Chile, and Medellín, Colombia.

MCH 021 (4919, formerly 4109) Nursing-midwifery, interzone (1961–) PR—To assist countries in the planning, strengthening and extension of the nursing-midwifery component of maternal and child health and family planning programmes, and in training nursing and midwifery personnel.

MCH 022 (4921) Educational centre for obstetrics in maternal and infant nursing in family welfare (1974–) R—To provide 2-month travelling courses for single-purpose midwives in order to complement their preparation in maternal, neonatal and infant health, family health, population dynamics, family planning, health education, nutrition and community participation.

NUT 001 (4200) Nutrition advisory services, interzone (1958–) R PR—To cooperate with the countries of the Region in preparing and implementing food and nutrition policies and in planning, executing, supervising and evaluating national nutrition programmes, particularly for vulnerable population groups; to train nutrition specialists; to promote food fortification and the production of low-cost foods of high nutritional value; and to promote nutrition research.

NUT 002 (4201) Nutrition advisory services, Zone I (1961–) R—To assist the countries of the zone in planning, organizing, implementing and evaluating the nutrition component of health programmes and in formulating food and nutrition policies.

NUT 003 (4203) Institute of Nutrition of Central America and Panama (1949–) R PR PH PI PN—To develop the programme of the Institute, which includes advisory services on applied nutrition programmes, training at various levels and research.

NUT 004 (4204) Nutrition advisory services, Zone IV (1956–) R—To assist the countries of the zone in planning, organizing, implementing and evaluating the nutrition component of health programmes and in formulating food and nutrition policies.

NUT 005 (4207) Caribbean Food and Nutrition Institute (1963–) R PR PH PG: Research Corporation, USA; Rockefeller Foundation; Ford Foundation; United Kingdom Committee of Freedom from Hunger Campaign; Governments of the Commonwealth (Caribbean); UNICEF—To assist the governments of the Caribbean area where English is spoken in improving nutrition and health through the formulation and imple-

mentation of food and nutrition policies, the training of personnel, the improvement of nutrition work at the local level, operational research, and the production of educational material on nutrition.

NUT 007 (4212) Research in nutrition anaemias (1973–) PR—To assist regional centres carrying out collaborative research on nutritional anaemias.

NUT 008 (4213) Iodine determination in endemic goitre (1973–) R—To review the public health and administrative problems associated with the implementation of salt iodization programmes and assist the countries concerned in finding practical solutions.

NUT 009 (4221) National food and nutrition policies (1972–) PR—To assist governments, in collaboration with other international agencies, in formulating and implementing food and nutrition policies.

NUT 010 (4230) Public health nutrition education and training (1969–) PR—To assist university schools for nutritionists-dietitians, and to assist in the planning and conduct of short courses in nutrition for professional and ancillary workers and in training hospital dietary and food service personnel.

NUT 011 (4233) Teaching of nutrition in medical schools (1972–) R—To assist in developing the teaching of nutrition in schools of medicine and public health.

NUT 012 (4238) Nutrition research (1968–77) PR (Cornell and Columbia Universities, USA)—To assist with studies of protein-calorie malnutrition, nutritional anaemia, endemic goitre and hypovitaminosis A, and in the development and testing of low-cost sources of protein.

HED 001 (3400) Health education, interzone (1968–) UNFPA PR; **HED 002 (3401) Caribbean area (1963–)** UNDP PR—To assist governments in developing health education services and in training health personnel in health education and related disciplines.

HED 004 (3410) Training of teachers in health education (1970–) PR—To assist countries of the Region in improving the health education component of the general education programmes and in improving the training of teachers in health education.

HMD 001 (6000) Medical education: textbooks and teaching materials, interzone (1967–) PK—To provide textbooks at a lower cost to medical students; to develop a cooperative arrangement with medical schools in order to ensure the selection of textbooks of high scientific and pedagogical quality; and to establish a revolving fund to ensure continuity of the programme.

HMD 002 (6100) Human resources development in public health, interzone (1963–) R PR—To strengthen the schools of public health in the countries of the Region.

HMD 003 (6101) Human resources development, Caribbean area (1969–) PR—To collaborate in programmes for the development of human resources for health work in countries of the Caribbean area.

HMD 004 (6113) Training of paramedical personnel, Caribbean area (1972–) UNDP—To assist in establishing, in 4 educational institutions in the Caribbean area, regional centres for the training of professional and auxiliary health personnel.

Intercountry Programmes (AMRO) (*continued*)

HMD 005 (6200) Education and training in health sciences, interzone (1953-) PR PG: UNESCO—To assist the medical schools in Latin America in the solution of problems, in developing their programmes and in improving teaching methods; and to collaborate in the organization of a regional system for the collection of information relative to the training of health personnel, and in the development of studies of human resources.

HMD 006 (6203) Health science education, Zone III (1971-) PR; **HMD 007 (6204) Zone IV (1966-)** PR; **HMD 008 (6206) Zone VI (1971-)** PR—To assist in improving programmes and methods of health science education.

HMD 009 (6208) Teaching of statistics in schools of medicine (1972-) PR—To assist in improving the statistics teaching programmes in medical schools of the countries of the Region.

HMD 011 (6216) Behavioural sciences in the training of health personnel (1965-) PR—To develop norms, principles, models and materials for teaching the behavioural sciences and for training instructors; to assist schools of health sciences in organizing and implementing teaching programmes in this field; and to collaborate in investigations on the teaching of behavioural sciences as applied to health problems.

HMD 012 (6221) Regional Library of Medicine and the Health Sciences (1970-) R PR PH PG: Government of Brazil; Commonwealth Fund; USAID; National Library of Medicine, USA—To assist the Regional Library, which was set up at the Paulista School of Medicine, São Paulo, Brazil, with the help of the Organization in 1967 (under project Brazil 6221) and which provides library support for biomedical education, research and practice in Latin America, and trains biomedical librarians at advanced level.

HMD 013 (6223) Teaching of social and behavioural sciences (1969-74) UNDP—To assist in improving teaching and research in the behavioural sciences as applied to the solution of medical problems.

HMD 015 (6228) Medical education, Caribbean area (1971-) R (University of the West Indies)—To assist the School of Medicine of the University of the West Indies in strengthening its administration, improving teaching methods and developing postgraduate training programmes.

HMD 016 (6234) Programme of advanced studies in health (1973-) PR—To identify the health problems of the hemisphere and develop new methods of applying science and technology to their solution; to promote graduate training of health professionals in matters related to the countries' priority problems; to identify higher education and research centres and establish new ones; and to disseminate information regarding educational, research and training opportunities in order to ensure that they are used as fully as possible.

HMD 017 (6300) Nursing education, interzone (1958-) R; **HMD 018 (6301) Zone I (1963-)** PR—To assist countries in strengthening nursing education programmes.

HMD 019 (6306) Nursing education, Zone VI (1973) PR—To provide training to a group of nursing instructors from the countries of the Zone in methods of planning, organizing and conducting programmes of study for the training of nursing personnel. Provided—a consultant, advisory services of the nurse assigned to the zone project SHS 018 (3206), and a grant for workshop costs.

A 3-week workshop on the development of nursing curricula was conducted for 14 nursing instructors in charge of coordinating academic programmes or responsible for teaching clinical subjects under university programmes in Argentina, Chile, Paraguay, and Uruguay.

HMD 020 (6310) Nursing education: textbooks, interzone (1971-) R PT—To improve basic and postbasic nursing and midwifery education through revision of curricula and provision of textbooks at a cost within the reach of students.

HMD 022 (6317) Seminars on nursing education (1971-77) R—To establish minimum standards for the development of nursing education programmes at various levels in the countries of Middle and South America.

HMD 023 (6319) Training of nursing auxiliaries (1970-) R—To make a study of the courses for training nursing auxiliaries in the countries of Middle and South America and of the work carried out by the auxiliaries; to stimulate trials of new techniques for training, and assist with programmes for training instructors.

HMD 024 (6320) Postbasic courses in nursing (1973-) R—To adapt postbasic nursing courses in Latin America to regional and local requirements for staff for nursing education and nursing services.

HMD 026 (6325) Educational technology in nursing (1974-) PR PH—To increase the educational output of the schools of nursing in Latin American countries by training teaching personnel, improving curricula, and using the resources of new educational technology to develop individualized teaching of the highest possible standard, in order to attain the goals, indicated in the Ten-year Health Plan for the Americas, of training 125 000 nurses during the present decade.

HMD 027 (6400) Sanitary engineering education, interzone (1964-) PR—To assist countries of the Region in developing their institutions for the training of sanitary engineers and in revising curricula.

HMD 029 (6600) Dental education, interzone (1963-) PR—To cooperate with university authorities of countries of the Region in improving teaching in schools of dentistry.

HMD 030 (6608) Training of auxiliary dental personnel, interzone (1965-) PR—To promote the training of various kinds of dental auxiliary personnel and their use for work for which a fully qualified dentist is not necessary, so as to permit the extension of dental services to the population and reduce their cost.

HMD 031 (6611) Communications and information in dental sciences (1973-) PH—To provide governments, teaching institutions and professional dental staff in Member countries with ready access to information on modern concepts and techniques in dentistry.

ESD 001 (0100) Epidemiology, interzone (1971-) R PR (US Public Health Service Center for Disease Control); **ESD 002 (0101) Zone I (1966-)** R; **ESD 003 (0102) Zone II (1965-)** PR; **ESD 004 (0103) Zone III (1961-78)** PR; **ESD 005 (0104) Zone IV (1966-)** PR; **ESD 006 (0106) Zone VI (1958-)** PR—To assist countries in developing programmes for the control of communicable diseases, in establishing and/or strengthening epidemiological and laboratory services, and in training personnel.

ESD 007 (0111) Seminar on Epidemiologic Surveillance Programmes, Rio de Janeiro (3-7 Dec. 1973) R—To review concepts and propose methods for the organization and operation of epidemiological surveillance systems in the Region, and coordinate medical and veterinary activities under efficient surveillance systems. The Seminar was attended by 26 epidemiologists and 17 veterinarians from countries of the Region. Provided—advisory services by staff members and financing for the seminar.

ESD 008 (3130) Third International Conference on the Mycoses, São Paulo, Brazil (27-29 Aug. 1974) PR PH PG: Wellcome Trust; US Army; National Institutes of Health, USA; Hoffmann-La Roche Co.—The Conference was convened in recognition of the need for an exchange of views among the scientists concerned with medical mycology in the Americas. Provided—the cost of attendance of 39 participants, meeting costs, and the services of staff members.

The Conference was attended by more than 60 investigators. The presentations provided up-to-date information on the progress made in the study of the basic mechanisms intervening in fungal pathogenesis and in the diagnosis, therapy and control of mycotic infections. The proceedings of the conference will be published in the PAHO Scientific Publications series.

MPD 001 (0200) Malaria technical advisory services, interzone (1955–) R PR (University of California) (New York University)—To provide assistance and technical advisory services in aspects of malaria eradication for which permanent country advisers are not required.

MPD 002 (0201) Malaria technical advisory services, Zone I (1969–) PR; **MPD 003 (0203) Zone III (1958–)** PR—To provide advisory services for malaria eradication programmes in countries of the zones, and to assist in coordinating activities.

MPD 004 (0216) Research on the epidemiology of malaria in problem areas (1967-73) R PR PM—To investigate possible methods of interrupting the transmission of malaria in areas with technical problems. Provided—a medical officer, an entomologist, and 2 technical officers, supplies and equipment, a grant, and local costs.

A large-scale field test, carried out between 1967 and 1969, showed that complete spraying of all interior surfaces of dwellings with the insecticide propoxur was both feasible and effective. Subsequent testing between 1969 and 1971 showed the efficacy of partial but more frequent spraying of houses with propoxur; the residual effect of the insecticide and the types of surfaces that neutralize that effect were studied and standard procedures were established in order to determine the most effective and economical way of applying propoxur at the lowest cost to each type of surface. Starting in 1972, a study was made of the resistance of *Anopheles albimanus* to propoxur and of possible ways of evaluating antimalaria measures, through the use of fluorescent powders in vector behaviour studies and longitudinal serological study of a sample population.

Preliminary field studies of the efficacy of the insecticide Landrin against malaria vectors indicated that it may be as effective as propoxur, and perhaps more so in certain areas.

Cooperation was maintained with New York University on research for development of a procedure for active immunization against malaria, and assistance was given to the University of California in connexion with studies on the resistance of anophelines to insecticides.

As from the beginning of 1974, work was continued under project El Salvador MPD 002 (0216).

MPD 005 (0218) Rural health services and malaria eradication campaigns (1967–) PR—To assist governments in bringing

about closer coordination between the general health services and malaria eradication programmes in order to extend health services to rural areas by using, wherever possible, the resources of the malaria programmes.

MPD 006 (1000) Parasitic diseases, interzone (1966–) PR—To assist countries with programmes for the control of parasitic diseases and in the development of research on control methods.

MPD 007 (1007) Schistosomiasis (1960–) PR—To foster the development of national programmes of schistosomiasis control and research.

MPD 008 (1008) Chagas' disease (1960–) R—To determine the epidemiological characteristics of Chagas' disease, its prevalence and its severity, provide support for national control programmes and encourage related research and training activities.

SME 001 (0300) Smallpox eradication, interzone (1951–) R—To assist countries with their immunization activities and with the development of surveillance systems and maintenance programmes.

MBD 001 (0400) Tuberculosis control, interzone (1957–) R—To assist countries in the planning, conduct and evaluation of tuberculosis control programmes, operational research, and training of personnel in control methods and techniques.

MBD 002 (0403) Tuberculosis control, Zone III (1963–) PR; **MBD 003 (0404) Zone IV (1962–)** R—To assist the countries of the zones in formulating, conducting and evaluating tuberculosis control programmes, in integrating them into the general health services, and in training personnel in control methods and techniques.

MBD 004 (0409) Courses in tuberculosis epidemiology and control (1969–) R—To train heads of national tuberculosis programmes in the basic principles of tuberculosis control administration and in epidemiological methods for evaluation of the tuberculosis problem.

MBD 005 (0410) Courses on tuberculosis bacteriology (1969–) R—To train senior laboratory personnel in tuberculosis bacteriology methods and techniques.

MBD 006 (0500) Leprosy control, interzone (1958-77) PR PH —To assist countries in developing leprosy control programmes, integrating them into the general health services, and training personnel.

MBD 009 (0512) Training and research in leprosy and related diseases (1973–) R—To plan and develop a regional centre, in Caracas, for training and research in leprosy and related diseases, beginning with pilot field studies, to be extended to other countries of the Region.

VDT 001 (0600) Venereal disease and treponematoses control, interzone (1950–) PR—To assist governments with the organization and administration of venereal disease and treponematoses control programmes.

VDT 002 (0612) Venereal disease seminars (1974–) R—To hold zone-wide biennial seminars in order to create a greater awareness of the venereal disease problem and develop more uniformity in control programmes.

VPH 001 (0700) Pan American Zoonoses Centre, Argentina (1956–) R UNDP PR PG: Various—To advise countries of the Region on the establishment and improvement of veterinary public health services and zoonoses control programmes; to

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carry out research on the most prevalent zoonoses; and to train technical personnel for zoonoses control work.

VPH 002 (0701) Veterinary public health, Zone I (1972-) R;
VPH 003 (0702) Zone II (1968-) PR; **VPH 004 (0703) Zone III (1957-) R;** **VPH 005 (0704) Zone IV (1968-) R**—To assist countries in developing veterinary public health services and education with special reference to zoonoses control and food protection.

VPH 007 (0718) Seminar on Systems of Epidemiologic Surveillance of Communicable Diseases and Zoonoses, Rio de Janeiro (3-7 Dec. 1973) R—To examine the experience gained in the existing surveillance systems for specific diseases, analyse guides prepared by the Organization and prepare models for future field application by health and agricultural epidemiological surveillance units. Eighty persons attended the seminar, including participants from 16 countries and staff members. Provided—the cost of attendance of participants, supplies and other seminar costs.

VPH 008 (0719) Census of primates (1972-75) PG: National Academy of Science, USA—To determine, in Colombia and Peru (Iquitos), the areas where trapping and transport of primates takes place; to obtain information on the movement of the primate population and on reproduction, mortality and related biological factors; and to formulate recommendations for the management and conservation of primates in both countries.

VPH 009 (0800) Pan American Foot-and-Mouth Disease Centre, Rio de Janeiro (1951-) PR PG: Inter-American Development Bank—To assist countries of the Americas in the control and prevention of foot-and-mouth disease and other vesicular diseases, the conduct of research related to the preparation and testing of vaccines, and the training of personnel.

VPH 011 (6500) Veterinary medical education, interzone (1966-) R—To strengthen the teaching of veterinary medicine, particularly as regards the preventive medicine and public health aspects.

VPH 013 (6508) Programme for training animal health and veterinary public health assistants, Caribbean area (1974) UNDP—A Caribbean Conference on Education and Training of Animal Health Assistants was held at Kingston, Jamaica, from 19 to 21 February 1974. The Conference, which had 27 participants from 15 countries and territories of the Caribbean area, reviewed the report of a PAHO/WHO/UNDP mission on the feasibility of establishing a training programme for animal health assistants in the Caribbean community. The resolutions and recommendations of the Conference were submitted to and approved by the VII Inter-American Meeting on Foot-and-Mouth Disease and Zoonoses Control, held in Port-of-Spain, Trinidad, from 17 to 20 April 1974. A regional school for training animal health assistants in the Caribbean countries has been planned with the assistance of the Organization and a request for financial support has been submitted to UNDP.

VBC 001 (0900) Plague control, interzone (1966-) R—To assist governments in implementing and improving their plague surveillance and control programmes and in studying the ecology of the reservoirs and vectors and plague epidemiology.

VBC 006 (2300) Aedes aegypti eradication, interzone (1954-) R PR; **VBC 007 (2301) Caribbean area (1950-) R PR**—To assist with *A. aegypti* eradication campaigns and with the organization of vigilance services.

VBC 011 (2311) Dengue surveillance, Caribbean area (1972-77) PR—To strengthen the network of laboratories and other centres coordinating dengue surveillance in the Caribbean area.

VBC 016 (2308) PAHO Scientific Advisory Committee on Dengue Fever, Bogotá (21-23 May 1974) R—At the third of the biennial meetings of the Committee, 13 committee members and 3 temporary advisers reviewed the work carried out on dengue fever prevention and control during the past 2 years and made recommendations for laboratory or epidemiological surveillance and research activities for the coming 2 years. The principal recommendation was that the Committee should be reconstituted to include the provision of advice on yellow fever and on *Aedes aegypti* eradication. The position regarding development of a vaccine against dengue was reviewed, as well as the progress achieved in the *A. aegypti* eradication programme. An assessment was made of the danger of yellow fever being introduced into urban receptive areas in the Caribbean and in Central America.

CAN 001 (5108) Survey on smoking patterns in Latin America (1970-74) PR PG: American Cancer Society—To study, in 8 Latin American cities, the patterns of cigarette smoking, the attitudes of the population towards the habit, and its relation to certain cardiovascular and respiratory conditions. Provided—consultants, sampling and interviewing expenses, technical advisory services, and data processing facilities.

In 1971 a committee of experts planned and designed the investigation, which was carried out in Bogotá (Colombia), Caracas (Venezuela), Guatemala City, La Plata (Argentina), Lima (Peru), Mexico City, Santiago (Chile), and São Paulo (Brazil). Later in that year a sample of 1600 persons of both sexes, between the ages of 15 and 74, was interviewed in each city. Preliminary analysis of the data showed that the percentage of smokers was between 33.8% and 55% in men, and between 5.7% and 26.1% in women. The number of heavy smokers was greater in the cities with higher percentages of smokers. Between 19.5% and 44.0% of male smokers and between 15.1% and 36.3% of female smokers had acquired the habit before the age of 16. In most of the cities, only about half of the smokers had any knowledge of ongoing antismoking campaigns. Reports of illness, absenteeism or restriction of usual activities were more frequent in smokers than in non-smokers.

The study is expected to provide a basis for the evaluation of smoking control programmes, provide countries with information that will assist them in formulating policies regarding tobacco smoking and in planning and implementing antismoking programmes, and promote support for the fight against cigarette smoking in the health agencies and voluntary organizations of the countries of the Region.

CAN 002 (5109) Cancer control (1973-) R PR—To support activities for improving the planning and operation of cancer registries, programmes for the detection and treatment of early cancer, specialized treatment centres, epidemiological studies, and training of personnel.

OCD 001 (5100) Chronic diseases, interzone (1967-) PR—To assist the countries of the Region in organizing and operating programmes for primary prevention of chronic diseases and for the care of patients suffering from such conditions, through planning for the comprehensive utilization of the present and foreseen human and material resources.

DNH 001 (4400) Dental health, interzone (1954-) R PR—To promote the development of dental health, and particularly of dental public health, in the countries of the Region, and assist in training various types of dental personnel.

DNH 002 (4407) Dental epidemiology, interzone (1964-) PR PG: International Sugar Research Foundation—To train teaching staff and investigators in the field of dental epidemiology and carry out studies on the prevalence of dental disease in Latin America.

DNH 003 (4409) Fluoridation, interzone (1967-80) PR—To promote the use of fluoridation for the prevention of dental caries in the Region by training engineers in fluoridation techniques, carrying out surveys and studies and assisting countries in planning and improving programmes for the fluoridation of water supplies, for salt fluoridation, or for topical application of fluorides, and in initiating fluoride production.

DNH 004 (4410) Laboratories for the control of dental products (1968-) PR PH—To assist in establishing regional laboratories or centres to cooperate with countries in improving the quality of materials used in dental treatment, controlling the quality of dental products, providing training for teachers and research workers in dental materials, and conducting applied research on dental materials.

DNH 005 (4411) Human and material resources in dentistry, interzone (1967-) PR—To study the current position as regards human and material resources in dentistry available in Latin America; and to assist in formulating and implementing plans for the development of dental resources.

DNH 006 (4412) Seminars on implementation of dental health programmes (1973-) PR—To hold a series of meetings of dental experts and directors of dental projects for the purpose of planning and developing dental programmes in Latin America.

MNH 001 (4300) Mental health, interzone (1965-) PR—To assist countries in strengthening their mental health programmes, including provision of services, training and research.

MNH 002 (4312) Courses in community psychiatry (1971-) PR—To assist several countries of the Region in training general practitioners in basic psychiatry, emergency care, follow-up of discharged cases, and case-finding.

MNH 003 (4313) Nursing in mental health (1971-) R—To assist countries in developing their psychiatric nursing education programmes, in the training of auxiliary personnel, and in the organization of psychiatric services.

MNH 004 (4314) Study on epilepsy (1972-) R—To determine the prevalence and distribution of epilepsy in selected countries and assess the need for services.

MNH 005 (4316) Epidemiology of suicides (1973-) R—To determine the major factors leading to suicide and attempted suicide in various Latin American countries, and to verify prevalence rates.

MNH 007 (4320) Seminar on Organization of Services for the Mentally Retarded, Cartagena, Colombia (17-21 Dec. 1973) PR—To examine the major problems in the organization of services for the mentally retarded in Latin America. The Seminar had 16 participants and 6 observers from 11 countries. The role of poverty and of the lack of psychosocial stimuli in the etiology of so-called functional mental retardation was discussed. Special emphasis was laid on malnutrition and on the lack of services for mothers and children as factors contributing to retardation. The educational aspects of assistance to the mentally retarded were also considered, and recommendations were made on the training of personnel. Provided—4 consultants, the cost of attendance of participants, and the services of staff members.

MNH 008 (4322) Development of psychiatry and mental health libraries (1973-) R—To provide a limited number of basic psychiatric journals to certain psychiatric departments in Latin America.

MNH 009 (4318) Epidemiology of alcoholism (1972-77) PG: National Institutes of Health, USA—To determine the prevalence of alcoholism and drinking patterns in 8 urban areas in Latin America, and to establish 2 centres for studies on alcoholism in Latin America.

RAD 001 (4500) Health aspects of radiation, interzone (1958-) R—To assist governments in developing or improving programmes concerned with the health aspects of radiation, including the use of radiation for diagnosis, therapy and research, and with the protection of radiation workers and the public.

RAD 002 (4507) Radiation protection (1964-) PR—To assist in the development of radiation protection programmes.

RAD 003 (4509) Radiation surveillance (1963-) PR—To assist governments in the Region in organizing radiation surveillance programmes.

ISB 001 (3316) Production and quality control of biologicals (1972-) R—To help countries of the Region to increase and diversify the production of biologicals in existing laboratories, and to improve their quality and distribution.

LAB 001 (3300) Laboratory services, interzone (1955-) R—To assist governments in improving the organization and administration of their health laboratory systems, in training the necessary staff, and in the production of vaccines for human and veterinary use.

LAB 002 (3311) Training of laboratory personnel (1968-77) PR—To improve the training of laboratory personnel by providing short intensive courses on specific subjects.

LAB 003 (3318) Inter-American programme of research and technical training for the control of mycotic diseases (1972-) R PG: US Army Medical Research and Development Command—To set up regional diagnostic and treatment centres and train personnel for dealing with mycotic problems in the Americas; and to establish programmes, including vaccine studies, for the prevention of mycotic diseases.

LAB 004 (3320) Creation of a biological products bank, Zone VI (1964-) R—To set up a biological products bank for reference, diagnosis, and emergency use.

BSM 001 (2100) Engineering and environmental sciences, interzone (1958-) R PR; **BSM 002 (2101) Zone I (1960-)** PR; **BSM 003 (2102) Zone II (1960-)** R; **BSM 004 (2103) Zone III (1960-)** PR; **BSM 005 (2104) Zone IV (1960-)** PR; **BSM 006 Zone VI (1960-)** PR; **BSM 007 (2107) Caribbean area (1956-)** UNDP—To assist countries with various engineering and environmental sanitation activities, including collection and disposal of solid wastes, food sanitation, school sanitation, sanitation of public establishments and transport, vector and rodent control, and training of auxiliary personnel.

BSM 010 (2124) Promotion of sanitary engineering (1974-) PR—To collaborate with the Inter-American Association of Sanitary Engineering regarding the establishment of national environmental sanitation plans designed to meet the goals set by the Ministers of Health of the Americas.

BSM 011 (2200) Water supply and sewerage, interzone (1959-) R PR; **BSM 012 (2203) Zone III (1964-)** PR—To advise

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countries on the planning, financing and execution of water supply programmes and on the organization and administration of central and local water supply and sewerage authorities.

BSM 013 (2213) Study and research on water resources (1965-) PG: ECLA—To make a comprehensive study of the water resources of the Region and their present and future uses, especially as regards the needs for provision of additional water supplies, and the analysis of waste water disposal problems and the resultant pollution of surface water and groundwater.

BSM 017 (2123) Centre for human ecology and health (1974-) R UNEP—To establish a centre for human ecology and health sciences with the functions of (i) assisting Member countries to develop biomedical and epidemiological methods for identifying, defining and monitoring health problems of environmental origin; (ii) advising governments on programmes to minimize the adverse effects of the environment on health; and (iii) providing information for global assessment of health problems of environmental origin.

BSM 019 (2126) Symposium on Environmental Pollution, Mexico City (29 July–2 Aug. 1974) R—To provide a forum for a broad, Region-wide debate on the current situation in the various countries of the Americas as regards air, water and soil pollution. The proceedings of the Symposium, which had nearly 150 participants from all the countries of the Region, will be published by the Pan American Centre for Sanitary Engineering and Environmental Sciences. Provided — a consultant, 21 temporary advisers, interpretation services, and supplies and equipment.

BSM 020 (2127) Sanitary engineering planning in the Andean Region, Zone IV (1974-) PR—To assist the countries of the Zone in developing national environmental sanitation plans, identifying the economic resources required to achieve national self-sufficiency or meet certain needs, and improving the use of existing installed capacity, especially in relation to water supply, sewerage and solid waste disposal services.

BSM 022 (2230) Rural water supply and sanitation (1974-) PR—To assist countries in expanding the coverage of their rural water supply and sanitation programmes in the shortest time and at the lowest cost possible, and in improving the quality of service, in order to achieve the goals set in the Ten-year Health Plan for the Americas.

CEP 001 (3137) Programme on traffic accidents (1972-) PR PG: National Institutes of Health, USA—To establish a clearing-house for information on traffic accidents; to advise countries on accident prevention; to convene international seminars that will discuss problems of common interest, outline policies and propose programmes; and to promote field research.

HWP 001 (4618) Manganese poisoning (1964-) PH PG: National Institute for Occupational Safety and Health, USA (Brookhaven National Laboratory, USA)—To assist research on the mental and neurological syndrome produced by chronic inhalation of dust containing manganese.

SES 001 (2114) Pan American Centre for Sanitary Engineering and Environmental Sciences, Lima (1968-) R PR PG: Government of Peru—To develop the Centre, which provides countries of the Region with specialized technical and scientific assistance in sanitary engineering and environmental sciences, collects and disseminates information on new developments and methods, and carries out training and research work.

SES 002 (2220) Institutional development of environmental services (1970-) R PR PW—To assist the institutions in Latin America concerned with water supply and sewerage services, and with such activities as solid waste disposal and atmospheric pollution control, in improving their operation and administration, and in training personnel for that purpose.

FSP 001 (4700) Food and drug control, interzone (1959-) PR —To provide technical advice to the national services responsible for the health aspects of production and control of foods, drugs and biologicals, both locally manufactured and imported; and to assist countries in improving national control services.

FSP 002 (4708) Food hygiene training centre (1971–77) R—To assist the centre for training in food hygiene that has been set up in the School of Public Health, Caracas, in cooperation with the Government of Venezuela, to provide advanced instruction in the basic principles of food technology for professionals, and basic courses in food hygiene, inspection, and control techniques for inspectors.

FSP 004 (4715) Food hygiene (1974-) PR—To define the responsibilities of the health sector, and provide guidelines and criteria for achieving food protection throughout the processes of production, transport, refrigeration, storage, and commercial distribution.

FSP 006 (4717) Seminar on Food Hygiene, Guatemala City (22–26 Oct. 1974) R—To bring together health, agriculture and food industry officials from the Latin American countries for a critical analysis of the current situation regarding control of food hygiene. There were 50 participants from 17 countries and 3 observers from the Central American Institute of Industrial Technology. Provided—consultant services and the cost of attendance of participants.

PPH 001 (3500) Health statistics, interzone (1960-) R PR—To develop a regional programme for improving basic statistical data for use in health programmes, to extend training in this field and to develop statistical research.

HSM 001 (3513) Inter-American investigation of mortality in childhood (1966-) PR—To study child mortality in selected urban and rural areas of Latin America and of the United States of America, in order to obtain accurate and comparable data on death rates in relation to nutritional, sociological, and environmental factors which may be responsible for excessive mortality.

DHS 001 (3501) Health statistics, Zone I (1964-) PR; **DHS 002 (3502) Zone II (1958-)** R; **DHS 003 (3503) Zone III (1955-)** R PR; **DHS 004 (3504) Zone IV (1956-)** R; **DHS 005 (3506) Zone VI (1959-)** PR—To assist countries in improving their vital and health statistics systems and advise them on the use of statistical data in national health planning and on the statistical aspects of projects.

DHS 006 (3515) Training in the use of computers in health statistics (1972-) R—To prepare guidelines for the installation and use of electronic equipment in the health services and for the training of personnel for operation of the equipment.

DHS 007 (3516) Regional Advisory Committee on Computers in Health (1970-) R—To hold biennial meetings of the Advisory Committee in order to develop a regional programme on the use of computers in the health field.

DHS 009 (6708) Training programme in health care records and statistics (1961-) R PR PH—To promote the development of courses in health care records and statistics.

ICD 001 (6707) Latin American Centre for Classification of Diseases (1955-) R—To study problems of medical certification of causes of death; to give training on classification of causes of death in accordance with the International Classification of Diseases; and to assist in revising the Classification.

0710 Rabies control, Mexico/United States border (1966-) PG: US Public Health Service Centre for Disease Control—To assist the Governments of Mexico and the United States of America in eliminating rabies in dogs and other animals along the border between the two countries.

0930 Workshop on Advanced Laboratory Techniques in Influenza Diagnosis, Bogotá (19-23 Aug. 1974) R—To advise personnel of the national influenza centres on the latest diagnostic techniques for influenza. The workshop, which consisted of lectures and practical laboratory exercises, had 14 participants from 10 countries. Provided—4 temporary advisers from the World Influenza Centre and the International Influenza Centre for the Americas.

0933 Seminar on Methods of Administration of Cholera Control Programmes, Washington, D.C. (24-28 June 1974) PR—The Seminar, which had 32 participants from all the countries of the Region, discussed the clinical and laboratory aspects of cholera, the epidemiological characteristics of the disease, and control methods. The report contained recommendations on cholera prevention and on action to be taken in case of a cholera emergency.

0934 Seminar on Cholera Control, Zone I, Port-of-Spain, Trinidad (2-3 Aug. 1974) PR—To analyse methods of cholera control adapted to circumstances and conditions in the English-language territories of the Caribbean area.

1015 Symposium on Research on and Control of Onchocerciasis in the Western Hemisphere, Washington, D.C. (18-21 Nov. 1974) PG: Wellcome Trust—To review the epidemiological situation of onchocerciasis in the Americas and to consider the problems involved. The Symposium noted that the finding of the new foci of the disease in Central and South America indicated a wider distribution than previously considered. It drew attention to the research needs and priorities in vector biology and control of the *Simulium* in the pathophysiology and immunology of the disease and especially to the need for animal models. It discussed the present methods of control through chemotherapy and nodulectomy and emphasized the need for evaluation of methods and of clinical pharmacological studies. The proceedings of the Symposium will be published as a PAHO Scientific Publication. Provided—cost of attendance of 20 participants, other meeting costs and the services of staff members.

3147 Advancement of neurology and treatment of neurological disorders (1974-) PH—To exert a concerted effort—involving selected centres in Canada, the United States of America, and Latin America—against specific important neurological disorders in Latin America.

3215 Factors influencing the development of nursing in Latin America (1972-73) R PR—To identify the factors that influence the development of nursing in Latin America and study the ways in which they affect the different areas of the profession. Provided—4 consultants in 1972 and 4 in 1973 to participate in 2 meetings of the working group on the subject.

At the 1972 meeting the various factors were identified. In 1973 a guide for study of these factors was prepared for publication.

The project is being continued under the intercountry project SHS 026 (3223)—Systems of nursing.

3303 Laboratory services, Zone III (1965-) PR; 3304 Zone IV (1972-) PR; 3306 Zone VI (1970-) R—To assist countries in improving health laboratory services and in the production and control of biological products, the training of personnel, and the development of investigations for the identification of health problems and of epidemiological research.

3709 Meeting of Ministers of Health (1972-73) PR (Government of Chile)—A working group on evaluation of the Ten-year Health Plan for the Americas composed of planning and information experts and health economists from 6 countries of the Region met with staff of the Organization at the regional headquarters from 4 to 8 June 1973. The purpose of the meeting was to design an evaluation system adaptable to conditions in each country and sufficiently flexible to provide comparable results in order to make a hemisphere-wide evaluation of accomplishments during the decade.

Three specialists (from the University of Chile, the Central Bank of Ecuador and the Mexican Social Security Institute) also met with PAHO/WHO staff and made recommendations on the Organization's assistance to countries in studies to determine the current level of financing in health investments, the changes needed to implement the Plan, cost studies and where possible cost/benefit studies, and areas requiring the greatest amount of financing.

The Final Report of the III Special Meeting of Ministers of Health of the Americas was published in the PAHO Official Documents series (No. 118).

3716 Financing and cost of the health sector (1974-) PR—To collaborate with countries of the Region in the analysis of financing, expenditure, costs and production procedures of the national health sectors, and in the rationalization and development of the respective information services.

SOUTH-EAST ASIA REGION

Bangladesh

SHS 001 (0009) Organization of health services, planning and hospital administration (1972-) R—To set up an organization for health planning in the Ministry of Health, train personnel in health planning and develop a health information system; to plan integral rural health services including a referral system; and to plan health and manpower studies with the aim of improving the delivery of medical care, especially in rural areas.

SHS 002 (0018) Strengthening of rural health services (1972-) R—To establish and strengthen health programmes for rural areas, including programmes for training professional and auxiliary health workers.

MCH 001 (0012) Family health (1973-) R UNFPA—To develop family health services as part of the general health services and to strengthen the programme for family health clinics, with emphasis on family planning.

HED 001 (0019) Public health education (1972-74) R VK—Following the survey carried out by a consultant in 1972-73, and the award of a fellowship for studies in public health (July 1973), two further fellowships were awarded (Dec. 1973-Jan. 1974) as part of the educational activities aimed at strengthening the Department of Social and Preventive Medicine of the Medical College, Dacca, and at instituting a diploma of public health course at the Institute of Public Health. Further supplies and equipment were provided with financial assistance from DANIDA.

HED 002 (0023) Health education (Jan.-March 1974) R—A consultant assisted in reviewing the health education organization and programmes and made recommendations for reorganization of services.

HMD 001 (0013) Nursing advisory services and training (1972-) R—To develop the nursing component of the health services and nursing and midwifery training programmes.

ESD 001 (0006) Strengthening of epidemiological services (1972-) R—To implement measures for the epidemiological surveillance and control of infectious diseases of public health importance.

MPD 001 (0001) Malaria eradication programme (1972-) R

SME 001 (0003) Smallpox eradication (1972-77) R VS—To confirm total eradication of smallpox from Bangladesh by 1977.

MBD 001 (0002) Tuberculosis control (1972-) R—To develop and implement a national tuberculosis control programme as an integral part of the basic health services, and to train key personnel for the purpose.

MBD 002 (0004) Leprosy control (1973-) R—To formulate and implement a national leprosy control programme as an integral part of the general health services.

VIR 001 (0016) Blindness survey (Oct. 1974) R—Following the 3 consultant visits in 1972 and 1973, a further visit was paid

to assist in evaluating the progress of the xerophthalmia prevention programme and advise on technical aspects.

VDI 001 (0015) Venereal diseases and treponematoses control (Feb.-April 1974) R—Following the consultant visit and provision of supplies and equipment in 1972, a further visit was paid to assist in the establishment of venereal disease serology and bacteriology at the Department of Bacteriology of the Medical College, Dacca, and in training staff.

SQP 001 (0011) Pharmaceutical and biological quality control (1972-74) R—To strengthen central and zonal drug quality control laboratories and train technical staff.

Following the consultant services in 1972 and 1973, a consultant electromechanical engineer (Jan.-April 1974) assisted in putting drug production equipment into working order, and trained national staff in its operation and maintenance.

ISB 001 (0017) Production of rehydration fluids (1972-) R—To produce rehydration fluid at the Cholera Research Laboratory, Dacca, and to train staff.

BSM 001 (0007) Community water supply and sanitation (1972-80) R—To plan and organize a national environmental health programme and expand existing environmental health measures, particularly those for community water supply.

0200 Fellowships R

Burma

SHS 001 (0088) Rehabilitation of the handicapped (1969-82) R—To expand medical rehabilitation services at the central and peripheral levels and to improve workshop facilities for the manufacture of orthopaedic and prosthetic appliances.

SHS 002 (0094) Planning and strengthening of health services (1969-) R UNICEF—To strengthen the health services, placing emphasis on development of comprehensive services for health care, to implement a national health plan, and to train health personnel, especially auxiliaries, for basic health services.

SHS 003 (0097) Maintenance and repair workshops for health equipment (1971-77) R UNICEF—To establish workshops and train staff in the maintenance and repair of equipment used in health institutions.

MCH 001 (0006.2) Maternal and child health (1969-) R UNICEF—To strengthen the departments of paediatrics and obstetrics of major hospitals and improve the teaching in these subjects, especially as regards the preventive aspects; and to improve and expand maternal and child health activities as part of the general health services.

MCH 002 (0103) School health services (July-Nov. 1974) R—A consultant assisted with plans to expand the school health services, beginning at the divisional level.

NUT 001 (0093) Nutrition services (1972-80) R—To strengthen the nutrition activities of the health services by organizing inservice orientation courses for medical staff and developing statistical models as part of the work of the nutrition unit in the Directorate of Health Services.

HED 001 (0066) Health education (1966; 1968; 1971-) R—To develop health education services and materials and to give training in health education to teachers and to those holding key posts in the school organization and in the general health services.

HMD 001 (0056.2) Nursing advisory services (1959-66; 1969-) R—To develop nursing and midwifery education and services.

HMD 003 (0028) Institute of Medicine I and School of Preventive and Tropical Medicine, Rangoon (Aug. 1974) UNDP—Following the completion of the main activities under this project in 1973, a 12-month fellowship was awarded.

HMD 004 (0089) Institute of Technology, Rangoon (1969-75) UNDP—To teach sanitary engineering to undergraduate and graduate civil engineering students.

HMD 005 (0100) Education and training of health manpower (1972-77) UNDP—To strengthen undergraduate and postgraduate education in the 3 medical institutes, as well as the training of nurses, midwives and health visitors and of various categories of auxiliary health personnel; and to expand and strengthen the rural health demonstration area, Hlegu, which will be used for the training of all members of the health team.

ESD 001 (0044.2) Strengthening of health services (epidemiology) (1968-) UNDP—To establish epidemiological units in all the administrative divisions of Burma; to organize epidemiological surveillance of diseases of public health importance and those subject to the International Health Regulations (1969); and to start a national immunization programme to vaccinate children against smallpox, tuberculosis, diphtheria, tetanus and pertussis, and poliomyelitis through the basic health services.

MPD 001 (0031) Malaria eradication programme (1957-66; 1968-) R—To undertake antimalaria operations throughout the country in progressive stages, with the ultimate goal of eradicating the disease.

MPD 002 (0087) Filariasis control (1969-) R

BAC 001 (0078) Plague control (1966; 1970-) R—To identify the factors responsible for the persistence of foci of plague and train personnel in the epidemiological investigation and control of the disease.

BAC 002 (0104) Epidemiology and control of cholera and other enteric infections (July-Oct. 1974) R—A consultant reviewed the epidemiological situation with regard to cholera and other enteric infections and assisted national staff in establishing a surveillance programme.

MBD 001 (0017) Leprosy control (1960-75) R VL UNICEF—To intensify the leprosy control programme, extend it to cover all endemic areas, and train personnel for the purpose.

MBD 002 (0065) Tuberculosis control (1964-75) UNDP—To intensify the community-oriented tuberculosis control services in all parts of the country.

VIR 001 (0069) Trachoma control (1966-67; 1970-) R UNICEF—To continue the control programme.

VIR 002 (0098) Virus diseases (1972-) R—To make epidemiological studies of virus diseases, carry out control measures, and train the necessary staff.

VDT 001 (0105) Venereal diseases and treponematoses control (July 1974) R—A fellowship was awarded in connexion with the programme for the control of these diseases.

DNH 001 (0090) Dental health services (1971-72; 1974-80) R—To expand facilities for the training of auxiliary dental personnel, to plan the extension of services, and to ensure gradual implementation of preventive and curative programmes.

MNH 001 (0099) Mental health training and services (1973-80) R—To train psychiatrists and health workers in mental health subjects including prevention and control of drug abuse, to undertake epidemiological investigations of drug dependence, and to strengthen facilities for psychiatric services, including rehabilitation.

RAD 001 (0091) Radiation health (1970-) R—To strengthen the radiation protection services in Rangoon and Mandalay, to establish training facilities and strengthen services in diagnostic radiology, radiotherapy and nuclear medicine.

ISB 001 (0077) Burma Pharmaceutical Industry (production of biologicals) (1964; 1968-) R UNICEF—To modernize methods of production and assay of bacterial and viral vaccines and antisera preparations, and develop new vaccines, at the Biological Division of the Burma Pharmaceutical Industry, Rangoon.

LAB 001 (0074) Strengthening of laboratory services (1967-77) R UNICEF—To strengthen laboratory services and promote their development at central and peripheral levels. The project is coordinated with project Burma ESD 001 (0044.2) (see above).

DHS 001 (0022) Vital and health statistics (1955-74) R—To develop the system of reporting and recording health statistical data, improve their processing, and train staff.

0083 Education in dentistry (1967-71; 1974-) R—To strengthen dental education.

India

SHS 001 (0185.2 and 3) Strengthening of health services, Punjab and Haryana (1967-73) R UNICEF—To strengthen the health services at state, district and local levels, giving particular attention to the provision of training programmes for health staff and supervision of auxiliary staff by professional staff, and to operational studies. Provided—a medical officer and a public health nurse (1967-73), a consultant (1968), and supplies and equipment.

The medical officer and the nurse assisted the health authorities in the 2 states in the strengthening of health services, particularly at district level, taking one district, Karnal, as a pilot area. The Karnal Hospital was strengthened to serve as a referral hospital and the auxiliary nurse/midwife school was converted into a school of nursing.

In June-July 1968 a 5-week orientation course for medical officers of primary health centres was held in Chandigarh. The consultant made a study subsequently of the need for such courses in other states in India and advised on curricula and facilities. The project staff collaborated in a WHO-assisted hospital utilization study in the 2 states as a basis for scientific planning of hospital services.

Malaria and smallpox programmes, the family planning programme, nursing services and education, particularly with regard to auxiliary nurse/midwives and local health visitors, and the statistical services comprising the Punjab State Bureau of Health Intelligence received assistance under the project through the collection of information and the holding of short courses and workshops.

The WHO nurse assisted in a national seminar on the training of medical officers in rural areas (Oct.-Nov. 1972) held at the

India (continued)

Rural Health Training Centre, Najafgarh (Delhi) for 18 participants from these and other states.

From January 1974 the activities of this project were merged with those of project HMD 006 (0280), Training programme for medical officers and trainers of basic health workers.

SHS 004 (0212.1) Nursing administration, Chandigarh (1968-) R; (0212.2) Gujarat (1968-) R; (0212.3) Bangalore (Mysore) (1973-) R—To develop nursing administration in teaching hospitals and promote inservice training and coordination of nursing services and nursing education.

SHS 005 (0218) National Institute of Health Administration and Education (1965-77) R UNICEF—To conduct studies in district health administration at Rohtak (Haryana) as a prelude to the promotion and planning of comprehensive health care services at the district level; to formulate research and teaching programmes pertaining to health administration, and to undertake teaching programmes, studies and research in the field of hospital administration.

SHS 006 (0269) Nursing in clinical specialties, (0269.2) Rajasthan (1972-) R; (0269.3) New Delhi (1972-) R; (0269.4) Mysore (1973-) R; (0269.5) Maharashtra (1973-) R; (0269.6) Pondicherry (1974-) R; (0269.7) Uttar Pradesh (1974-) R—To improve clinical practice in certain nursing specialties.

SHS 010 (0199) School for training of technicians (1967-) UNDP—To train technicians in the installation, maintenance and repair of electrical and mechanical equipment used in health institutions.

SHS 011 (0276) Strengthening of family planning aspects of nursing administration (1972-73) UNFPA—To strengthen the nursing and midwifery components of health care during the maternity cycle. Provided—a nurse/midwife educator consultant, a 6-month fellowship, and supplies and equipment.

The consultant (March 1972–Feb. 1973) made an analysis of hospital nursing staff at the Government Erskine Hospital, Madurai, which showed the staffing to be 48% below the Tamil Nadu Nurses and Midwives Council's requirements. Studies of staff utilization resulted in some non-nursing duties being delegated to other categories of personnel. A 4-week course on family planning was conducted for graduate nurses from local hospitals, and plans were made for follow-up of the participants. The consultant also took part in a programme of clinical teaching for medical students in their last year, dealing with obstetrical nursing.

MCH 001 (0114) Strengthening of departments of paediatrics, obstetrics and preventive and social medicine in Indian medical colleges (1958-77) R UNICEF—To expand and improve undergraduate and postgraduate teaching of paediatrics in certain medical colleges and develop integrated maternal and child health courses for various categories of personnel in paediatric departments.

MCH 002 (0278) Integration of maternal and child health services, including family planning services, into the general health services (1971-) UNFPA—To integrate family health services, strengthening inservice training, health care delivery and operational research.

HRP 001 (0275) Strengthening of teaching of human reproduction, family planning and population dynamics in medical colleges (1971; 1973-) UNFPA—To strengthen teaching and research in the relevant departments of medical colleges.

NUT 001 (0181) Applied nutrition programme (1964-) R UNICEF (FAO)—To improve the health component of the applied nutrition programme assisted by FAO and UNICEF and to train health personnel for the programme.

NUT 003 (0267) Nutrition training (1970-71; 1973-) R—To support nutrition courses and train teaching staff at the National Institute of Nutrition, Hyderabad, and other institutions.

HED 001 (0190) Training in health education (1968-77) R—To establish and develop 3 postgraduate health education training centres with rural and urban field practice areas.

HED 002 (0247) Central Health Education Bureau (1969-71; 1973-75) R—To strengthen the Bureau.

HED 003 (0108) Health education: Assistance to states (1971-) UNDP—To set up and develop state health education bureaux, and to coordinate the health education activities of the general health services with those of the family planning programme or integrate them into the programme.

HED 004 (0274) Health education in schools, including family life education (1971-) UNFPA UNICEF—To integrate family life education in school, college and teacher-training curricula, establish and develop a health education programme in the educational system, prepare teachers in health education, and develop teaching aids required for primary, secondary, collegiate and teacher-training institutions.

HMD 001 (0111) Medical education (1958-61; 1965-77) R—To improve teaching and research in medical colleges.

HMD 002 (0136.1) Postbasic nursing education, Uttar Pradesh (1962; 1972-77) R; (0136.2) Gujarat (1963-77) R—To expand postbasic nursing education, with initial emphasis on postbasic degree programmes offering professional specialization in teaching, administration, public health or one of the clinical specialties.

HMD 002 (0136.6) Postbasic nursing education, Karnataka (July 1973–Jan. 1974) R—A consultant assisted the College of Nursing, Bangalore, in the planning and organization of 4 public health nursing courses, and taught on the courses. She visited field training areas, where she assisted with the students' field practice, and she formulated criteria for the selection of such areas.

HMD 002 (0136.7) Postbasic nursing education, New Delhi (1969-77) R; (0136.8) Maharashtra (1960-77) R—To expand postbasic nursing education, with initial emphasis on postbasic degree programmes offering professional specialization in teaching, administration, public health or one of the clinical specialties.

HMD 005 (0257) Physical therapy school, Baroda (1968-) R—To train physical therapists to degree standard at the school in the S.S.G. Hospital, Baroda.

HMD 006 (0280) Training programme for medical officers and trainers of basic health workers (1974-) R—To strengthen the rural health services by training doctors and trainers of basic health workers in order to convert single-purpose into multipurpose workers.

HMD 008 (0221) Seminars and workshops on medical education (1965-) R—To strengthen medical teaching.

A seminar on training during internship was held in Pondicherry (29 Jan.–2 Feb. 1974) in collaboration with the Indian

Academy of Medical Sciences. There were 27 participants from Indian medical colleges. Provided—4 consultants and 2 temporary advisers.

HMD 010 (0277) Strengthening of the teaching of human reproduction, family planning and population dynamics in nursing and midwifery education (1972–) UNFPA—To improve the maternal and child health and family planning components of the training of auxiliary nurse/midwives; to strengthen the domiciliary midwifery and public health nursing experience of nursing students in hospital schools of nursing; and to improve the teaching of human reproduction, family planning and population dynamics in teaching institutions for nursing personnel.

ESD 001 (0259) National Institute of Communicable Diseases, Delhi (1967–) R—To strengthen the faculty of the National Institute of Communicable Diseases in order to improve the field training of epidemiologists.

ESD 002 (0182) Strengthening of health services (epidemiology) (1963–74) R UNDP—To establish or improve health intelligence units in state health directorates; to train staff in epidemiology, health statistics, microbiology and communicable disease control; and to develop the National Institute of Communicable Diseases, Delhi.

MPD 001 (0153) Malaria eradication programme (1958–) R

SME 001 (0233) Smallpox eradication (1967–77) R VS—To confirm total eradication of smallpox from India by 1977.

MBD 001 (0081) Leprosy control (1961–) R UNICEF—To develop a leprosy control programme and train the necessary staff.

MBD 002 (0053) Tuberculosis Chemotherapy Centre, Madras (1955–) R UNDP—To undertake controlled clinical trials to find simple, effective and inexpensive methods of tuberculosis control through domiciliary chemotherapy of ambulant patients, and to carry out related research.

MBD 003 (0103) National tuberculosis programme (1956–) UNDP UNICEF—To develop a national tuberculosis programme through implementing control programmes in each district in accordance with the results obtained in model control programmes, epidemiological findings and operational research; train health workers for the district tuberculosis programmes; and develop methods and procedures for assessment of the programme.

VIR 001 (0214) Virological techniques (1968–69; 1971–) R—To develop laboratory capacity for the diagnosis and surveillance of virus diseases and establish competence in the production and testing of live poliomyelitis vaccine at the National Institute of Communicable Diseases, Delhi.

VPH 001 (0244) Training in veterinary public health (1969–) R—To develop a postgraduate (Master's degree) course in veterinary public health at the All-India Institute of Hygiene and Public Health, Calcutta.

CAN 001 (0238) Cancer control pilot project, Tamil Nadu (1968–80) R VG—To develop a pilot project for the early diagnosis and control of oropharyngeal and cervical cancer and set up a training centre at Kancheepuram.

DNH 001 (0208) Improvement of dental education (1966–) UNDP

RAD 002 (0192) Radiation Medicine Centre, Bombay (1963; 1967–80) R—To organize the training of specialists in nuclear medicine and to strengthen research and services at the Centre.

RAD 003 (0232) Course in medical physics (1967–) R—To train medical physicists.

SQP 001 (0222) Drug laboratory techniques and biological standardization (1967–77) R—To develop the services for the quality control of pharmaceutical and biological preparations and train staff.

ISB 001 (0174) Production of freeze-dried smallpox vaccine (1964–) R UNICEF—To attain self-sufficiency in the production of freeze-dried smallpox vaccine of standard quality.

ISB 002 (0225) Freeze-dried BCG vaccine production (1968; 1970; 1973–77) R—To produce freeze-dried vaccine of standard quality.

LAB 001 (0188) Strengthening of laboratory services (1965–) R—To strengthen health laboratory services and improve the training of laboratory technicians.

BSM 001 (0251) Groundwater training course (1970–71; 1973–74) R—To train staff in groundwater development and utilization for community water supplies.

BSM 002 (0268) Village water supply (1971–80) R UNICEF—To plan and coordinate the development of community water supplies in rural areas, including the well-drilling programme in areas where hard rocks present special problems and in those where water is scarce; and to train professional and drilling staff.

BSM 003 (0272) Solid wastes disposal (1973–) R—To study the problem of solid wastes in urban communities and plan solid wastes management.

CEP 001 (0226) Prevention and control of water pollution (1969; 1971–80) R—To provide technical advice on organizational and other matters related to the abatement and control of water pollution.

CEP 002 (0270) Control of air pollution (1971–) R—To study the air pollution problems connected with industrial development and promote a control programme.

CEP 003 (0279) Medical toxicology unit (1972–78) R—To study the effect of air pollutants and organochlorine pesticides in man.

Following the consultant visit in 1972, a further consultant (Dec. 1973–March 1974) assisted in improving laboratory procedures at the Industrial Toxicology Research Centre, Lucknow.

HWP 001 (0197) Occupational health (1964; 1970–) R—To conduct courses in occupational health and to initiate research projects in specific industries.

SES 001 (0176) National Environmental Engineering Research Institute, Nagpur (1961–) R—To develop the Institute as a major research and training centre for environmental sanitation and to coordinate research programmes.

SES 003 (0210) Public health engineering education (1967–70; 1972–) UNDP—To train sanitary engineers and develop advanced courses in the design of community water supply programmes.

India (continued)

DHS 001 (0121) Indian Council of Medical Research (statistics) (1962–) R—To improve statistical procedures for the planning, conduct and evaluation of research in medicine and public health.

DHS 002 (0255) Strengthening of health statistical services (1970; 1972–) R—To develop a health statistics system; to review and improve hospital statistics and medical records; to plan curricula for the training of medical records personnel; and to organize and conduct training programmes for statistical staff.

0200 Fellowships R

0258 Improvement of hospital facilities (March 1974) R—A fellowship was awarded for the study of hospital design and construction.

Indonesia

SHS 001 (0086) Strengthening of national health services (1969–79) R UNICEF—To plan, coordinate and integrate health services and programmes, standardize and intensify the training programmes for health personnel, and promote studies of public health practice intended to lead to the optimum delivery of health care.

SHS 004 (0072) Establishment of health centres, Irian Jaya (1970; 1972–73) WI—To develop integrated health services in accordance with the available facilities and resources. Coordination of other projects in Irian Jaya was effected under the project. Provided—a medical officer (May 1972–Dec. 1973) and a consultant (Jan.–April 1970).

Efforts were concentrated on making the health centre the nucleus of the health services and on simplifying and standardizing staff categories. Job descriptions and a guide for health centres in Irian Jaya aimed at improving the delivery of medical care were prepared. Plans for the integration of polyclinics and maternal and child health clinics and the public health training of doctors were elaborated. Assistance was also given with measures for health education and environmental sanitation. At the end of 1973, 5 health centres were in operation (Jayapura, Abepura, Sentani, Biak and Sorong).

SHS 005 (0087) Rehabilitation of hospitals and polyclinics, Irian Jaya (1970–71; 1973–) WI—To improve facilities in hospitals and polyclinics and to train staff in hospital administration and in selected fields of community health services.

SHS 006 (0139) Strengthening of health services, Irian Jaya (1974–) UNDP—To strengthen health services in the Province.

MCH 001 (0104) School health (1974–) R — To develop school health services.

MCH 002 (0113) Family health services (1970–) UNFPA —To plan, organize and operate maternal and child health and family planning activities as a regular function of the health services directed towards families.

HED 001 (0078) Health education (1968–70; 1973–) UNDP —To strengthen health education services.

HED 003 (0121) Development of health education in family health (1971; 1973–) UNFPA—To develop health education in the context of the family, including school health and family life education, by the promotion of training, studies, and the use of different methods and media.

HMD 001 (0062) Medical education (1964–77) R—To develop the teaching programmes of the medical faculties in keeping with national needs and the progress of medical science.

HMD 002 (0074) Nursing and midwifery education (1967; 1969–80) R—To strengthen and develop nursing and midwifery education.

HMD 003 (0097) Postgraduate education in public health (1972–77) R—To develop the teaching programme of the School of Public Health, University of Indonesia.

HMD 007 (0114) Strengthening of the teaching of human reproduction, family planning and population dynamics in medical schools (1971–74) UNFPA—To strengthen teaching in medical schools, developing educational objectives and promoting coordination between departments responsible for the different areas of field training. Provided—a medical educator in gynaecology and obstetrics (March 1971–Feb. 1973), a scientist (June 1972–1974), 4 medical education consultants (Feb.–March 1971), a paediatric education consultant (June–Nov. 1971), 2 other consultants in obstetrics and gynaecology in 1971 and 2 in 1972, and 4 fellowships (1972).

A team of 4 consultants reviewed teaching and research and assessed the impact of current teaching methods in 9 of the 11 medical schools in Indonesia in 1971. Medical educators and consultants continued in 1971–73 to assist in the strengthening of the teaching of family planning, human reproduction and population dynamics through support to the Indonesian Consortium of Medical Sciences in the development of curricula and through participation in workshops and seminars on related subjects. A first workshop on such teaching was held in Jakarta (12–16 March 1971) by the Consortium with the assistance of the team of 4 WHO consultants. Two other consultants reviewed teaching methods and objectives at a further workshop for senior medical educators in 1971. The medical educator (gynaecology and obstetrics) assisted in a seminar on public health aspects of the same subjects, also in Jakarta (4–6 Oct. 1971), and participated in a WHO Intercountry Seminar on Community Medicine for Medical Teachers (29 Nov.–4 Dec. 1971), and a WHO-assisted national workshop with the same title (6–11 Dec. 1971), both held in Surabaya.

The WHO scientist assigned to the project in 1972 coordinated plans for the development of teaching methods with the Consortium of Medical Sciences, which produced a report on health manpower, including manpower planning, in that year. Local seminars were held in March and June in Bandung and Medan, respectively, and the medical educator (gynaecology and obstetrics) also participated as one of 2 consultants, and together with 2 temporary advisers, in the WHO-assisted national workshop on community and family health teams in Medan and Parapat (20–29 Nov. 1972), which was attended by 41 members of the staff of Indonesian medical schools. A visiting professor in community and family health was assigned in 1973, a number of local courses and seminars were held, and the WHO scientist participated in an intercountry course on leadership and management by objectives, Jakarta (20 Jan.–28 Feb. 1973).

Administrative changes and developments in teaching methods and policies led to a revised plan of action for the project in mid-1973; assistance with national training activities and planning, including plans for the development of the national university, continued until it was decided to phase out the project in 1974.

HMD 008 (0119) Resources for family health (1971–74) UNFPA—To take a census of health manpower, make an inventory of health service and training facilities, and develop a records systems. Provided—a statistician (Sept. 1972–Oct.

1974), a consultant (July-Sept. 1971), and supplies and equipment, including a vehicle, office machines, and data-processing equipment.

The census of all health manpower resources employed by government departments, local health authorities and the private sector included information on age, sex, education, occupation, employer and place of work. A permanent health-manpower reporting system was put into operation, and an inventory of health training institutions in Indonesia was made, with details on staff and their qualifications, enrolment and graduation of students, and training facilities. The data, once analysed, will serve for planning and development of the national family planning programme in particular, and the health programme in general.

ESD 001 (0091) Strengthening of epidemiological services (1969-) R—To develop epidemiological units at the central and intermediate levels and train the necessary staff.

ESD 002 (0098) National Institute of Medical Research (1972-) R—To design, organize and analyse biomedical studies, including those on parasitic diseases.

MPD 001 (0032) Malaria eradication programme (1955-) R—To control and ultimately to eradicate malaria through measures integrated with other health service activities, with special attention to Java and Bali and to the areas of other islands that need to be given priority for socioeconomic reasons.

MPD 002 (0076) Malaria control, Irian Jaya (1970-) UNDP WI

SME 001 (0081) Smallpox eradication (1967-) R

BAC 001 (0099) Plague epidemiology (1969-74) R—To assess factors responsible for the persistence of plague and study its foci.

MBD 001 (0050) Tuberculosis control (1961-) R UNICEF—To integrate BCG vaccination without prior tuberculin testing into the work of the maternal and child health clinics and regency polyclinics; to train staff in case-finding by direct sputum smear examination and in meeting the requirements of ambulatory treatment.

MBD 002 (0009) Leprosy control (1955-70; 1974-) VL—To organize a demonstration and training area for leprosy control.

VPH 001 (0100) Veterinary public health (1971-) R—To study, and carry out a survey on the main zoonoses prevalent in the country and train veterinary public health officers.

OCD 001 (0107) Establishment of cytology services and training (1970-) UNFPA—To establish laboratory services for cytology as part of the national family planning programme.

DNH 001 (0079) Dental health (1968-) UNDP—To plan dental health activities and strengthen dental services within the general health services, and to promote research in dental health.

MNH 001 (0096) Mental health (1974-) R—To train medical, nursing and auxiliary health personnel for community-oriented mental health services within the framework of comprehensive health services, to strengthen psychiatric services, including rehabilitation, and to undertake epidemiological studies of mental illness.

RAD 002 (0069) Training of X-ray and electromedical technicians (1966-75) R UNDP—To train medical radiological and engineering technicians in the use, maintenance and repair of electromedical equipment.

SQP 001 (0106) Quality control of food and drugs (Dec. 1973-March 1974) R—A pharmaceutical chemist consultant assisted quality control laboratories in Jakarta, Semarang and Bandung in strengthening their organization and in training drug analysts. He also trained 4 senior officials in factory inspection and drug sampling techniques.

LAB 001 (0060) Laboratory services (1966-77) R UNICEF—To strengthen health laboratory services.

BSM 001 (0071) National community water supply and sanitation (1969-80) R—To plan community water supply, sewerage and storm-water drainage systems, water pollution control and general sanitation work; and to train staff.

PIP 002 (0129) Jakarta sewerage and sanitation project (1974-76) UNDP—To prepare a plan for the development of sewerage and sanitation in Jakarta.

HWP 001 (0105) Development of central and regional occupational health and industrial hygiene laboratories (1970-71; 1973-) UNDP—To develop the National Institute of Occupational Health, Jakarta, and the regional centres.

SES 001 (0061) Training in sanitary engineering (1968-77) R—To train sanitary engineers at the Institute of Technology, Bandung.

HLT 001 (0115) Libraries for health personnel (1971-) UNFPA—To establish lending and reference libraries for health personnel on subjects related to family health.

0200 Fellowships R

Maldives

SHS 001 (0005) Public health administration (1969-) R—To develop comprehensive health services, promote manpower development, and strengthen medical care services, with particular emphasis on the control of endemic diseases of social and economic importance.

HMD 001 (0009) Training of auxiliary health personnel (1971-78) R UNDP—To establish a school for the training of auxiliary health personnel.

MPD 001 (0010) Malaria control (1972-) R—To control malaria throughout the islands with the aim of eventual eradication.

BSM 001 (0007) Water supply and sanitation (1971-80) R—To develop water supply and sewage disposal systems for Male, and an environmental sanitation programme; and to train staff.

PIP 001 (0011) Water supply and sewerage, Male (1974-) UNDP VC—To develop a water supply and sewerage system for Male.

0201 Fellowships UNDP

Mongolia

SHS 002 (0022) Community health services (1973-74) R—To train physicians in all aspects of community health service and provide for national staff to attend educational meetings.

SHS 003 (0028) Rehabilitation services (1973-77) R—To develop medical rehabilitation services and train staff.

MCH 001 (0004) Maternal and child health services (1965-74) R UNDP UNICEF—To develop the maternal and child health services and establish referral facilities.

Mongolia (continued)

NUT 001 (0023) Nutrition (July-Aug. 1974) R—Two consultants spent one month investigating problems of nutritional status and intakes of nutrients, and established an order of priority for measures aimed at their solution.

HED 001 (0014) Health education (1970–) R UNICEF—To develop and implement a health education programme.

HMD 001 (0008) Nursing services and education (1966; 1968–75) R—To develop schools of nursing, strengthen the training programmes for nursing personnel, and improve nursing services.

HMD 003 (0006) State Medical Institute, Ulan Bator (1970–79) R UNDP—To develop the medical education system by improving admission procedures, revising curricula and practices in teaching and evaluation, and training a corps of teachers in different branches of medicine who will use modern educational techniques.

ESD 001 (0018) Epidemiological services and surveillance (1972–74) R—Following the consultant visit and provision of supplies and equipment for a measles vaccination programme in 1973, a further consultant and a staff member from headquarters were assigned in September 1974 to assist in conducting a trial of the "A" group vaccine against cerebrospinal meningitis; 30 000 doses, the necessary media, and other supplies were provided.

VPH 001 (0013) Brucella vaccine production (1970; 1972–) UNDP—To produce freeze-dried *Brucella* vaccine and establish laboratory facilities for its testing.

CAN 001 (0011) Cancer (1968–) R—To study the epidemiology, early detection and treatment of cancer.

CVD 001 (0010) Cardiovascular diseases (1967–) R—To study the epidemiology of cardiovascular diseases and to improve measures for their prevention and treatment, with particular emphasis on rheumatic, hypertensive and ischaemic heart disease.

DNH 001 (0015) Dental health services (1970; 1972–75) R—To strengthen dental health services, particularly the paediatric stomatology services, train dental health personnel, and study the feasibility of a fluoridation programme.

MNH 001 (0021) Strengthening of mental health services and training of personnel (1974–) R—To evaluate psychiatric and neurological services and promote their integration into the general health services: to introduce new diagnostic, preventive, curative and rehabilitation methods in mental health practice; and to train staff.

RAD 001 (0012) Strengthening of radiological services and maintenance of electromedical equipment (1968–69; 1971–80) R—To train engineering technicians to undertake the repair and maintenance of electromedical equipment; and to promote radiation protection practices in health institutions.

SQP 001 (0016) Quality control of drugs (1971; 1973–) R—To develop pharmaceutical production and improve the services associated in quality control; and to train staff.

LAB 001 (0002) Public health laboratory services (1964–75) UNDP UNICEF—To develop the health laboratory services and train personnel in health laboratory work.

LAB 002 (0027) Rehydration therapy (production of rehydration fluid) (1973–75) R—To produce rehydration fluid and train

paediatricians in the practice of oral and parenteral rehydration therapy.

SES 001 (0020) Strengthening of health services (public health inspection) (1974–) R—To evaluate and develop the sanitary control services; to improve training of personnel for the state sanitary inspection services; and to strengthen the public health chemical laboratories.

DHS 001 (0007) Health statistics (1967–74) R—To develop health statistical services and to train personnel. (The project will be merged with SHS 005 (0030), Management of health services, from 1975.)

0200 Fellowships R**Nepal**

SHS 001 (0021) Development of health services (1968; 1970–) R—To strengthen the development of the basic health services in conformity with the Government's development plans, placing emphasis on the training of all categories of health workers, with the object of eventually establishing an integrated comprehensive health care service; to conduct health surveys, health manpower surveys and relevant studies; and to coordinate associated projects operating in the country.

SHS 002 (0032) Medical stores management (1972–) R—To develop medical stores and supply services.

SHS 003 (0036) Maintenance of electromedical equipment (Oct.–Dec. 1973) R—A consultant electromedical engineer assessed the situation with a view to the development of maintenance and repair services for electromedical equipment, carried out repairs and trained technicians in maintenance work.

SHS 004 (0002) Nursing education and services (1954–74) UNDP UNICEF—To coordinate nursing activities; set up a basic nursing school; organize courses for assistant nurse/midwives; upgrade nursing services in Bir Hospital; improve clinical facilities, and develop public health nursing services that will provide teaching practice for nursing and assistant nurse/midwife students.

HED 001 (0019) Health education (1967–) R UNICEF—To introduce health education in the basic health services and specialized projects, and to strengthen health education in schools and teacher-training institutions.

MPD 001 (0001) Malaria eradication programme (1954–) R

SME 001 (0009) Smallpox eradication (1962–63; 1966–77) R UNICEF—To achieve total eradication of smallpox by 1977.

MBD 001 (0013) Leprosy control (1967–) R—To develop the leprosy control programme and train the necessary personnel.

MBD 002 (0016) Tuberculosis control (1965–) R UNICEF—To develop a tuberculosis control programme within the basic health services and train personnel in control methods and techniques.

VPH 001 (0033) Prevention of rabies (Jan. 1974) R—Following the consultant visits in 1972–73, a fellowship was awarded for virological studies.

LAB 001 (0010) Health laboratory services (1967–79) R—To develop health laboratory services in order to improve diagnostic services and provide support for an epidemiological unit; and to train personnel.

BSM 001 (0029) Community water supply and sanitation (1971-80) R—To plan, organize and implement a long-term comprehensive national programme of community water supply and waste disposal.

PIP 001 (0025) Water supply and sewerage in Greater Kathmandu and Bhaktapur (1969-74) UNDP—To improve water supply and sewerage in Greater Kathmandu and Bhaktapur.

0200 Fellowships R

Sri Lanka

SHS 001 (0063.2) Medical rehabilitation (1968-70; 1972-) R—To improve the rehabilitation services and train the necessary staff.

SHS 002 (0083) Port health services (1969-70; 1972-) R—To strengthen port health services.

SHS 003 (0092) National health planning (1970-78) R—To establish and strengthen a national health planning unit in the Ministry of Health and train health personnel in health planning.

SHS 004 (0094) Strengthening of electromedical division (1972-78) R—To train technicians for the repair of electromedical equipment and improve workshops undertaking the maintenance and repair of X-ray and other electrical and electronic equipment used in health institutions.

SHS 005 (0102) Training of anaesthesiologists (1972-77) R—To establish a national centre for training in anaesthesiology.

MCH 001 (0105) Family health (1971-) UNFPA UNICEF — To promote family health as an integral part of the general health services.

NUT 001 (0085) Public health nutrition (1969-) R—To strengthen the public health nutrition programmes and to train staff.

HED 001 (0072) Development of health education (1966-67; 1969-77) R—To strengthen health education services, including health education in schools, and evaluate activities; and to strengthen health education teaching in medical colleges, teacher-training institutions and other training centres.

HED 002 (0104) Health education in family health (1971-) UNFPA (UNESCO)—To promote family health through health education.

HMD 001 (0047) Medical education (1959; 1963-77) R—To develop undergraduate and postgraduate teaching programmes and provide training for teachers at the 2 faculties of medicine.

HMD 002 (0053) Nursing advisory services (1960-67; 1969-77) R—To develop nursing and midwifery education and services.

HMD 005 (0101) Health manpower study (1971-74) UNFPA —To make a study of the work of Ministry of Health staff providing health care to rural communities as part of family health services; and to carry out a national study of health manpower. Provided—3 consultants, supplies and equipment, and fellowships.

The consultants, 2 nursing education specialists (Feb.-April 1971; April-Sept. 1972) and a specialist in medical education (Feb.-April 1972), assisted in the collection and analysis of data for a health manpower study made necessary by the rapid increase in the country's population, and a mathematical model was developed in order to determine the manpower requirements

by computer. An interim report was submitted to the National Advisory Committee for Health Manpower Study, offering different solutions for the use of resources and staff; the results of 11 subsidiary studies were annexed to this report. The medical education specialist made a second visit (March-May 1973) to assist in the study on doctor utilization forming part of this project. UNFPA will continue to give assistance by providing fellowships to directors of studies and senior research workers. A consolidated report is in preparation.

HMD 006 (0106) Strengthening of nursing and midwifery education (1972-76) UNFPA—To strengthen the nursing and midwifery education provided in the 8 basic schools of nursing, the Mulleriyawa affiliation school, and the postbasic school of nursing in Colombo, with emphasis on public health and midwifery and using reference material in the local languages.

HMD 007 (0107) Teaching of human reproduction, family planning and population dynamics in medical schools (1974-) UNFPA—To strengthen the teaching of human reproduction, family planning and population dynamics in medical schools.

ESD 001 (0078) Strengthening of epidemiological services (1967; 1970-74) R VC—To strengthen the epidemiological services and to train personnel.

MPD 001 (0058) Malaria eradication programme (1960-80) R

VPH 001 (0093) Veterinary public health (zoonoses control) (1972-74) R—The consultant appointed in 1973 was extended to August 1974 to assist in completion of the project; a draft plan of operation was prepared for a new project for control of rabies.

VBC 001 (0103) Vector control (1972-) UNDP—To control insect vectors of communicable diseases of public health importance.

DNH 001 (0087) Dental health (1970-) R—To develop training programmes for dental health personnel and expand dental health services as part of the general health services.

MINH 001 (0037) Mental health (1955-56; 1960-61; 1963; 1966-67; 1969-80) R—To train various categories of health personnel in psychiatry; to develop community-oriented mental health care services within the existing system for public health care delivery; to introduce new approaches in mental health care; and to undertake epidemiological investigations of mental illness.

RAD 001 (0071) Radiation health (1966; 1969-80) R—To strengthen radiation protection services and train staff.

SQP 001 (0077) Quality control of biological and pharmaceutical products (1966-67; 1971-77) R—To strengthen the quality control of pharmaceutical and biological preparations and to train staff.

LAB 001 (0066.3) Strengthening of laboratory services (1966-) R—To develop specialized diagnostic and reference services in support of communicable disease prevention and control, and to train staff.

LAB 002 (0089) Production of improved vaccines (1969-70; 1974-77) R—To produce freeze-dried smallpox vaccine and other vaccines.

BSM 001 (0064) Community water supply and sanitation (1963-) R—To develop programmes of water supply, sewage disposal, storm-water drainage and general sanitation, and to train personnel.

Sri Lanka (continued)

PIP 001 (0086) Public water supply, drainage and sewerage for the south-west coastal area (Sept. 1974) UNDP—Two 12-month fellowships were awarded under this project, for which assistance was provided between 1967 and 1971.

HWP 001 (0082) Occupational health and industrial hygiene (1968–70; 1972–) R—To control health hazards in industry.

FSP 001 (0108) Food hygiene (1974–) R—To establish a national food control administration and train staff.

DHS 001 (0045) Health statistics (1964–70; 1972–73) UNDP—To establish an information system geared to the requirements of national health planning and to monitoring the performance of the health services, improve the processing of data on health manpower, and train staff. Provided—2 statisticians, 3 medical records officers, 9 fellowships, supplies and equipment, and the services of staff of the intercountry hospital statistics project SEARO 0072.

Following the first WHO-assisted stage of this project (1957–61), during which a statistician assisted in the revision of medical records and training of statistical staff, two addenda to the plan of operations in 1962 and a third in 1963 resulted, after the award of a fellowship in 1963 extended to 1964, in the appointment of a medical records officer (Jan. 1965–Dec. 1966). She assisted in the establishment of a medical records department in a general hospital in Colombo. In 1965 a pilot project for a records system was started at Colombo South Hospital, Kalubowila. Apart from the design, printing and distribution of records forms, progress was slow until mid-1966, when the establishment of the records department was approved, and the office at Colombo South Hospital opened officially on 1 January 1967. With the signature of a fourth addendum to the plan of operations, UNDP assistance began in 1967.

The WHO statistician who had supervised the first stage of the project and a medical records officer reviewed the situation in 1967, and after a further visit by the same statistician in 1968, another medical records officer (Sept. 1968–Dec. 1969) was appointed; the pilot project was extended to Colombo General and Colombo North Hospitals and the Cancer Institute. Attempts to extend it further had to be abandoned because of the shortage of senior national staff. Two courses were held in disease coding according to the International Classification (eighth revision), and in basic medical records procedures. A survey of all record forms was made, and recommendations were made on their use.

During the last stage of the project, a second WHO statistician (Sept. 1972–Dec. 1973) assisted in the subsidiary studies forming part of the health manpower study project HMD 005 (0101), and in particular those on demographic characteristics determining future health needs, on censuses of doctors, nurses and midwives, on rural health staff, utilization of doctors, outpatient care, and staffing patterns.

0200 Fellowships R**0201 Fellowships UNDP****Thailand**

SHS 001 (0093) Medical rehabilitation (1968–) R—To develop rehabilitation services in certain hospitals in the provinces and in Bangkok and to train the necessary staff.

SHS 002 (0098) Health planning and administration (1970–) R—To strengthen and improve national health planning and health administration, with primary emphasis on the phased

integration of disease-control and special health programmes, eventually leading to the development of a comprehensive health care service.

MCH 001 (0127) Bangkok municipality family planning field worker project (1973–75) UNFPA UNICEF—To strengthen and expand family planning services, using field workers, as an integral part of general maternal and child health services; to increase motivation for small family size; and to train the necessary personnel.

MCH 002 (0130) Accelerated development of maternal and child health and family planning services (1973–) UNFPA UNICEF—To strengthen maternal and child health and family planning services, to improve family health as a whole, and to demonstrate the feasibility of delivering family planning services effectively.

HRP 001 (0129) Expanded sterilization project (1973–75) UNFPA—To strengthen maternal and child health and family planning services by provision of adequate services to meet the demand for voluntary sterilization.

NUT 001 (0125) National Institute of Food and Nutrition, Bangkok (1973–) UNDP—To strengthen the Institute, and to improve medical training and research in nutrition.

HMD 001 (0057) Faculty of Tropical Medicine, Mahidol University, Bangkok (1974) R—Following the assistance to this project between 1959 and 1973, 3 fellowships were awarded with the aim of further strengthening the Faculty.

HMD 002 (0089) Nursing education and services (1968–) R—To study nursing needs and resources, strengthen nursing services and education, develop university-level courses for nurses and organize and conduct studies related to nursing services and education.

HMD 003 (0095) Faculty of Public Health, Mahidol University, Bangkok (1968–77) R—To develop the teaching programmes of the Faculty of Public Health, Mahidol University, Bangkok.

HMD 004 (0097) Medical education and training (1971–) R—To develop the teaching and training programmes of the medical faculties at Chiangmai, Chulalongkorn and Mahidol Universities and the Faculty of Postgraduate Studies at Mahidol University, and to plan the medical faculty for the Prince of Songkhla University.

HMD 008 (0115) Teaching of human reproduction, family planning and population dynamics in medical schools (1970–) UNFPA—To strengthen teaching and research in the medical school departments involved in the teaching of human reproduction.

MPD 001 (0065) Malaria eradication programme (1962–) R

VDT 001 (0082) Venereal disease control (1967–74) R—To control venereal diseases and train staff in clinical and laboratory procedures.

VBC 001 (0070) Vectorborne disease control (1963–68; 1970–) R—To train staff in medical entomology and vectorborne disease control; and to continue the work of the *Aedes* Research Unit, Bangkok (see project Interregional VBC 025 (0306)).

DNH 001 (0086) Dental health (1967–) R—To improve the education of professional and auxiliary dental staff, and to strengthen dental services.

DNH 002 (0108) Faculty of Dentistry, Chiangmai (1971; 1973-) R—To establish a new school of dentistry as part of Mahidol University and to train staff of the Faculty of Medicine, Chiangmai.

RAD 001 (0067) Radiation protection service (1963; 1965-71; 1973-) R—To establish a radiation protection service in the Department of Medical Sciences, Ministry of Public Health, and to train staff.

RAD 003 (0109) School for Medical Physicists, Bangkok (1974) UNDP—A 12-month fellowship was awarded under this project, for which assistance was provided from 1971 to 1973.

SQP 001 (0079) Quality control of pharmaceuticals (1970-) R—To strengthen legislation and laboratory competence in the quality control of pharmaceutical preparations and train drug analysts and drug inspectors.

LAB 001 (0075) Strengthening of laboratory services (1968-77) R—To organize national health laboratory services and strengthen the teaching of laboratory sciences and training in medical laboratory technology.

LAB 003 (0123) National laboratory animal centre (1973-75) UNDP—To establish a laboratory animal centre to provide small animals of standard quality to teaching and research institutions and biological laboratories.

BSM 002 (0090) Community water supply and sanitation (1969-76) UNDP UNICEF—To plan, organize and administer a national environmental health programme, including the extension of community water supplies, and to train personnel.

SES 001 (0126) Department of Sanitary Engineering, Chulalongkorn University, Bangkok (1973-77) R UNDP—To strengthen the Department. Following the visit of a consultant (Nov. 1973-Feb. 1974), who assisted in implementing an introductory course in environmental planning, a second consultant (May-Nov. 1974) helped to improve the teaching and research programme for the treatment of industrial wastes.

FSP 001 (0066) Food and drug control administration (1964-1971-) R—To establish a food and drug control administration in the Department of Medical Sciences, Ministry of Public Health, and to train staff.

DHS 001 (0037) Vital and health statistics (1957-60; 1968-69; 1971-74) R—To develop a coordinated health statistics system and to train the staff required for this purpose and for the development of medical records offices.

0128 Training and increased mobility for health personnel in the national family planning project (1973-75) UNFPA UNICEF—To strengthen maternal and child health and family planning services by training staff and increasing their mobility, particularly in rural areas.

0200 Fellowships R

Intercountry Programmes (SEARO)

SHS 001 (0102) Asian Institute for Economic Development and Planning (1964-) R (ESCAP)—To assist the faculty of the Institute in training and research related to the health component in socioeconomic development.

SHS 002 (0104) Organization and administration of hospital and medical care services (1968-) R—To assist in the develop-

ment of regional health services; in the organization of medical care, including hospital administration; in the development of uniform medical records systems for hospitals and health centres; and in training staff.

A regional Seminar on Organization of Medical Care in relation to General Hospitals was held in Srinagar, Kashmir, India (14-23 Oct. 1974) to define the role of the general hospital as part of the community health services and its coordinating role within the referral system. It reviewed trends in the organization of hospital-based medical care, identified problems of administration and management and drew up guidelines for their solution, and proposed training and research measures. There were 21 participants from 8 countries of the Region, and 4 observers. Provided—2 consultants, 2 temporary advisers and the assistance of field staff.

SHS 003 (0116) Intercountry nursing meetings (1967; 1969; 1972; 1974) R—To hold biennial meeting for the purpose of studying problems of nursing that are of interest to all countries of the Region.

SHS 004 (0128) Courses in the management of infectious-disease hospitals (1967-) R—To assist in improving infectious-disease hospitals so that they may provide adequate facilities for diagnosis and treatment, and for training.

A consultant (Dec. 1973-Feb. 1974) visited infectious-disease hospitals in Indonesia, Sri Lanka and Thailand (Dec. 1973-Jan. 1974), recommended measures for providing increased accommodation, better use of nursing staff and laboratory facilities, and disinfection procedures.

The same consultant (Sept.-Nov. 1974) and 2 temporary advisers assisted in the preparation of teaching materials and the organization of a seminar on management of infectious diseases in infectious-disease hospitals and wards, held in Bangkok (14-25 Oct. 1974). The aim of the seminar was to improve diagnostic work and information for epidemiological surveillance and for planning purposes. There were 13 participants from various countries of the Region and 14 observers from Thailand.

SHS 005 (0143) Pharmaceutical and medical stores management (1969; 1973-74) R—Following the consultant visits to other countries in the Region in 1969 and 1973, a further consultant (Sept.-Dec. 1974) assisted the Government of Thailand with arrangements for the ordering and storage of pharmaceutical products, and medical stores management in general.

SHS 006 (0148) Health research and development (1970-) R—To provide support and coordination in health research and development, and particularly in country health programming, project formulation and management, programme budgeting and evaluation and information systems development.

A seminar on quantitative studies of health services in the Region was held at the Regional Office (14-18 Jan. 1974) with 13 participants from 6 countries. Provided—a consultant and the services of staff from headquarters and the Regional Office, and of field staff.

SHS 009 (0215) Public health advisory services (1973-) R—To provide support to activities currently financed under inter-regional projects and suitable for implementation in the South-East Asia Region.

Following the visits of consultants on cancer to countries of the Region in March and October 1973, a fourth consultant coordinated a meeting of senior educationists on the teaching of social aspects of obstetrics in medical colleges in India, held at the Regional Office (26-30 Nov. 1973), to help revise undergraduate and postgraduate obstetrics curricula. A further consultant (Nov.-Dec. 1973) assessed the magnitude of problems of visual

Intercountry Programmes (SEARO) (continued)

impairment and blindness in 3 countries, reviewed preventive services, and advised on training and on epidemiological studies—the latter with special reference to cataract. He also drew up guidelines for assistance in promoting public health ophthalmology.

SHS 011 (0226) Medical rehabilitation (1974–) R—To study the problems of rehabilitating the physically handicapped, and the facilities available, and to advise on the integration of various components of rehabilitation services into a unified programme.

SHS 012 (0178) Team in health planning, training and related study methodologies (1970–77) UNDP—To promote the development of national health planning in the countries of the Region through regional and national training courses, meetings and study groups, and consultations to assist in the formulation of national health plans, in delineating the health aspects of development plans, and in strengthening health planning units.

MCH 001 (0144) Rehydration therapy (1967; 1970–) R—To assist in producing rehydration fluid and in establishing rehydration units in children's hospitals and at peripheral centres, and to train staff.

An intercountry course on rehydration therapy was held at the Cholera Research Institute, Dacca (18–23 March 1974) for senior paediatricians and medical officers engaged in the treatment of diarrhoeal diseases in children. Existing practices in such treatment were reviewed and recommendations on standard electrolyte solutions for parenteral use were made; the course also covered the training of auxiliaries for diarrhoeal disease treatment and the establishment of rehydration therapy units in health services. There were 17 participants from Bangladesh, Nepal and Thailand. Provided—a consultant, a temporary adviser, secretarial assistance from the Regional Office, and the cost of attendance of participants.

MCH 002 (0163) Course for senior teachers in child health (1970; 1973–) R—To provide advanced training for senior teachers in child health.

MCH 005 (0184) Seminars on school health (1971; 1974) R—A consultant (Sept.–Oct. 1974) assisted in preparations for a seminar on school health in Rangoon (21–26 Oct.).

MCH 010 (0234) Education and studies in child health (1974) R—A course in neonatology was held at the Faculty of Medicine, University of Chiangmai, Thailand (18 Feb.–1 March 1974), with 20 senior paediatricians from 4 countries and senior paediatric nurses from Thailand, to review current teaching methods and practice in neonatology and recommend improvements such as the introduction of the community approach to care of the newborn.

MCH 011 (0192) Regional team in family health (1970–77) UNFPA—To support national and international activities concerned with family health services and with training, evaluation and research in the subject.

MCH 013 (0219) Development of maternity-centred aspects of family health services (1972–74) UNFPA—To support country and intercountry activities in family health, particularly the maternity-centred approach, and to assist the rapid development of postpartum family planning services. Provided—a medical officer (Jan. 1972–Jan. 1974), and a temporary adviser (Nov. 1972).

The medical officer took part in international conferences and seminars on family health and family planning organized by

WHO, other agencies in the United Nations system, and governmental and nongovernmental organizations, and in discussions on the development and programming of UNFPA activities concentrated on Bangladesh, India, Maldives, Nepal and Sri Lanka. In the latter part of 1973 and early 1974, UNFPA project proposals for Bangladesh and Nepal were finalized. Visits were paid and technical assistance was given by the medical officer to institutions responsible for family health work.

The temporary adviser reviewed the maternity and gynaecology services at the Maternity Hospital, Kathmandu, Nepal.

HRP 001 (0199) Group education in service, teaching and research aspects of human reproduction, family health and population dynamics (1971–) UNFPA—To assist in the development of education and studies in human reproduction, family health and population dynamics.

A symposium on clinical aspects of intrauterine devices was held in Chiangmai, Thailand (5–10 Nov. 1973) with 15 participants from countries of the Region to review current developments and clinical studies in the use of the contraceptive method. Provided—a consultant, a temporary adviser, the services of 2 field staff, and the cost of attendance of participants.

A meeting to review contraceptive practices in countries of the Region was held in Dacca (3–8 June 1974). An assessment was made of the state of contraceptive technology. There were 24 participants from 4 countries. Provided—3 consultants, 2 temporary advisers, and the cost of attendance of participants.

NUT 001 (0097) Nutrition training and advisory services (1963–75) R UNICEF—To assist with the training of medical personnel in nutrition, and to advise on public health measures in nutrition.

HED 003 (0213) Health education materials and media with particular reference to family planning (1974–) UNFPA—To assist in developing and implementing the health education component of a family health programme, and in assessing its effectiveness; to improve the educational materials; and to provide training in family health education to staff of the competent institutions and to key health personnel.

Following the activities under this project in 1971–73,¹ an intercountry consultation on the development of family health education materials was held in Bangkok (22–27 April 1974), with 22 participants from 6 countries. Provided—a consultant and the cost of attendance of participants.

HMD 001 (0139) Short courses for nurses and other health personnel (1967–) R UNICEF—To assist in conducting short courses for nurses and other health personnel in order to acquaint them with new concepts and skills, particularly as regards patient care and family health, and in preparing reference and teaching materials; and to assist countries in areas of nursing services and education that require study.

HMD 004 (0194) WHO-sponsored training centre for nurses, Wellington, New Zealand (1970–) R—To provide a training programme for nurses from the Region who cannot obtain admission to regular postbasic courses because of lack of secondary education and/or the language skills required.

HMD 005 (0216) Participation in meetings (1973–) R—To provide for participation from the South-East Asia Region in group educational activities outside the Region in various disciplines, and to support activities currently assisted under inter-regional projects and that are suitable for implementation in the Region.

¹ See *Off. Rec. Wld Hlth Org.* 1974, No. 213, p. 246.

HMD 007 (0096.2) Medical teacher training and continuing education (1969-) R UNDP—To build up regional capacity to train teachers of health professionals in medical pedagogy, and to introduce continuing education.

HMD 008 (0206) Medical education in human reproduction, family planning and population dynamics (1972-) UNFPA—To assist in planning, conducting and evaluating short courses for senior medical teachers in order to improve the teaching of human reproduction, family planning and population dynamics in medical schools of the Region.

A third course on the teaching of human reproduction, family planning and population dynamics was held at Denpasar, Bali, Indonesia (29 July-9 Aug. 1974) with 30 participants from 4 countries. Provided—2 consultants, 2 temporary advisers, and the cost of attendance of participants. A further course on family planning was held at the Regional Office (4 and 5 July) for 29 staff members of the United Nations and agencies.

ESD 002 (0193) Epidemiological surveillance and training (1966-) R—To assist in strengthening epidemiological surveillance programmes covering the most important communicable diseases, in introducing epidemiological surveillance work into the normal functions of local health services, and in training staff.

MPD 001 (0007) Assessment team on malaria eradication (1959-61; 1963-) R—To make an independent assessment of malaria control and eradication programmes in countries on the Region.

MPD 002 (0094.2) External cross-checking of blood films (1968-77) R—To develop and strengthen facilities in the countries of the Region for independent cross-checking of blood films from malaria eradication and control programmes.

SME 001 (0030) Smallpox eradication and epidemiological advisory team (1962-77) R VS—To assist in achieving total eradication of smallpox by 1977.

MBD 001 (0113) Tuberculosis training and evaluation team (1967-77) R—To provide training in the operations and techniques of national tuberculosis control; assist in programme-oriented operational research and in the evaluation of integrated national tuberculosis control programmes in the Region; and provide practical assistance to national tuberculosis programmes as required.

VPH 001 (0168) Training in veterinary public health and promotion of veterinary public health services (1968-70; 1972-) R—To assist in training public health veterinarians.

CVD 001 (0228) Epidemiology, control and management of cardiovascular diseases (1973-74) R—Following the consultant visit at the end of 1973, a team of 3 consultants (a neurologist, a specialist in physical medicine and a physiotherapist) assisted in a workshop on the control of stroke and rehabilitation of stroke patients held in Madras, India (18 Feb.-2 March 1974). The 20 participants from 6 countries of the Region discussed problems of stroke in the community, identification of risk groups, elimination of risk factors such as hypertension, organization of services for stroke cases, and research.

MNH 001 (0172) Mental health (1970; 1972-80) R—To assess mental health problems and the status of psychiatric services, training and research; and to assist in organizing group activities for the promotion of community-oriented services, in coordinating regional epidemiological investigations of mental

illness, and in studying the socioeconomic aspects of mental health.

MNH 002 (0227) Epidemiology and control of drug abuse and rehabilitation of drug dependent persons (1973-) R—To study the problem of drug dependence and to assist in organizing epidemiological investigations, treatment services and rehabilitation programmes.

Three consultants (Sept.-Oct. 1974) assisted with the organization of an intercountry seminar on prevention and control of drug abuse held in Jakarta, Indonesia (7-12 Oct.) for representatives of narcotic control enforcement agencies, public health and social welfare authorities and education departments in the countries of the Region.

RAD 001 (0042.2) Radiation protection (1968-80) R—To develop radiation protection services, to assist with legislation against health hazards from ionizing radiation, to promote radiological sciences as applied to human health, and to train personnel for radiation monitoring and surveillance.

IMM 001 (0153) Training in immunology (1969-70; 1972-) R—To review progress in immunology, particularly in relation to communicable diseases, and to strengthen training in the specialty.

ISB 002 (0117) Diphtheria/pertussis/tetanus vaccine production (1968; 1970; 1972-77) R UNICEF—To assist in the production of diphtheria/pertussis/tetanus vaccine consistent with WHO minimum requirements.

LAB 001 (0159) Health laboratory services (1970-75) R—To review the progress achieved in the reorganization of national health laboratory services and their administrative and technical operation and management; to determine ways of standardizing methods, equipment, teaching, recording and reporting in order to formulate guidelines for coordination with recipient services such as epidemiological and health services; and to assist in the training of laboratory personnel.

LAB 002 (0176) Courses on health laboratory techniques (1969-) R—To assist with courses on health laboratory techniques.

An intercountry course on rabies vaccine was held at the Haffkine Institute, Bombay (2-13 Sept. 1974) with 20 participants and 4 observers from countries of the Region; they included directors of rabies vaccine laboratories, an epidemiologist and a bacteriologist. Provided—3 consultants, 2 temporary advisers, and the cost of attendance of participants.

LAB 003 (0191) Serum reference procedures (1971; 1974-) R—To build up competent serum reference procedures, and ultimately to establish a regional centre.

BSM 001 (0064) Community water supply and sanitation (1965-) R VW—To assist countries of the Region in developing urban and rural community water supply and sanitation programmes.

PIP 001 (0211) Public health advisory services, Mekong Committee (1968-) UNDP/UN—To provide technical advice to the Committee for the Coordination of Investigations of the Lower Mekong Basin, including advice on environmental conditions and problems directly or closely related to the many water resources development projects.

CEP 002 (0210) Environmental pollution control (1973-80) R—To assist in the control and abatement of environmental pollution.

Intercountry Programmes (SEARO) (continued)

Following the consultant visit in 1973, and a further visit by a waste management consultant (Sept.-Nov. 1974) to prepare a report on the situation and on pollution hazards in countries of the Region, a Regional Seminar on Solid Wastes Management was held in Bangkok (29 Oct.-7 Nov. 1974) with some 20 participants. A third consultant also assisted in the preparation of the seminar.

SES 002 (0225) Planning of environmental health services (Sept.-Dec. 1974) R—A consultant reviewed the environmental health services in some countries of the Region in preparation for a regional seminar on the planning of such services, scheduled for December 1974.

HSM 001 (0220) Health statistics methodology (1972-) R—To develop the skills and techniques necessary for the application of statistical methods to health problems in the Region.

HLT 003 (0198) Regional centre for documentation on human reproduction, family planning and population dynamics (1971-) UNFPA—To set up a regional centre, in the Regional Office, to produce reports and other documentation on aspects of human reproduction, family planning and population dynamics for wider distribution, particularly to schools for professional and auxiliary health workers, to the health services, to the main health institutions in the Region, and to international centres for such documentation.

A consultant (May-July 1974) prepared a bibliography on "steroid contraception" and a review of its current application.

EUROPEAN REGION

Albania

SHS 001 (4302) Emergency hospital (1972–) UNDP—To establish emergency medical care services for the whole country, in particular an emergency hospital in Tirana, to train personnel, and to select appropriate equipment.

HMD 099 Lecturers and fellowships (1974–) R

CAN 001 (8101) Cancer control (1962–74) UNDP—To develop a specialized cancer programme by building up a central institute with up-to-date equipment, and by training physicians, physicists and engineers for the medical and technical aspects of the programme.

Algeria

SHS 001 (4001) Development of public health services (1963–) R UNICEF—To plan and organize public health services, with emphasis on extending and improving the basic health services, on training public health personnel at the National Institute of Health and the schools for health personnel, and on some specialized activities such as nursing education and mental health services.

SHS 003 (8401) Public health ophthalmology (1974–75) R—To promote comprehensive services to prevent loss of vision and blindness caused by communicable and noncommunicable diseases, with special attention to long-term planning, particularly of the services for screening and prevention of eye diseases in children.

HRP 001 (5102) Maternity-centred family planning (1972–) UNFPA—To strengthen and develop integrated maternal and child health/family planning activities and various aspects of family protection, including maternal health, prenatal, postnatal and child care, spacing of childbirths and medical and social family care. At present the project is carried out mainly in the existing maternity centres and special attention is being given to the training of health personnel at all levels and to health education aspects.

HMD 001 (6102) Institute of Medical Technology, Constantine (1970–76) UNDP—To establish an institute for the training of medical assistants and public health midwives to meet the country's urgent requirements.

HMD 002 (6202) Medical education (1971–) R—To develop new teaching methods in medical faculties and train teachers and technicians.

HMD 099 Lecturers and fellowships (1974–) R

ESD 001 (1001) Surveillance and control of communicable diseases (1971–) R—To identify and define high- and low-risk groups with regard to communicable diseases that constitute major public health problems, as a first step towards instituting control measures.

MPD 001 (2001) Malaria eradication programme (1968–) R—Programme following the pre-eradication programme started in 1964.

VIR 001 (1701) Communicable eye disease control (1972–73) R—To assess the national programme for communicable eye disease control and to provide consultant services to the Trachoma Institute, as a follow-up of activities carried out between 1956 and 1970 with the assistance of UNDP and UNICEF. Provided—2 consultants (Jan.-Feb. 1972 and Nov. 1972–Jan. 1973).

According to the results of surveys carried out in selected areas of southern Algeria, the severity of trachoma and related seasonal conjunctivitis has decreased. More systematic studies are, however, needed, as reliable information on the prevalence of trachoma infection is still lacking.

Control activities are being integrated into the work of the basic health services and the Government is making efforts to improve the research and training capabilities of the Trachoma Institute in Algiers. The WHO consultants advised the research staff of the Institute on laboratory working methods, long-term research programmes and training of laboratory personnel.

As from 1974, assistance has continued under the public health ophthalmology project Algeria SHS 003 (8401).

LAB 001 (1002) Vaccine production (1974–) R—To expand and modernize the production of various vaccines and other biological products needed for immunization programmes. The project is complementary to that for the surveillance and control of communicable diseases (ESD 001 (1001)).

BSM 001 (3001) Environmental sanitation (1963–) R UNICEF—To develop and strengthen environmental sanitation services, promote environmental sanitation work and train sanitation personnel.

PIP 001 (3201) National water authority (1963–76) UNDP—To set up a national water authority responsible for planning and implementing a water development investment programme, carry out preinvestment studies and train personnel.

HWP 001 (5201) Occupational health services (1974–75) R (ILO)—To develop occupational health and safety services and establish education and training programmes for different levels of personnel.

SES 001 (3003) Training of sanitary engineers (1971–75) R—To train sanitary engineers at undergraduate and postgraduate levels at the sanitary engineering centre, Rabat.

Austria

SHS 001 (4001) Institute of Public Health (1973–75) R—To establish a public health institute, starting with an environmental pollution control department.

Austria (continued)

HMD 001 (4401) Nursing education and administration (1968; 1970-75) R—To prepare nurses for administrative and teaching posts.

HMD 099 Lecturers and fellowships (1974-) R

Belgium

HMD 099 Lecturers and fellowships (1974-) R

Bulgaria

HMD 003 (6001) Training of medical teachers (1972-75) R—To provide additional training in the educational sciences to teachers in medical teaching institutions.

HMD 098 (6041) Lecturers and fellowships (1966-) UNDP

HMD 099 Lecturers and fellowships (1974-) R

ESD 001 (1001) Computer application in communicable disease control (1974-75) R—To assess the adequacy of the innovations being introduced in the use of computers in communicable disease control, prepare a national symposium on the subject, and enable Bulgarian specialists to study similar computer applications in other countries.

Czechoslovakia

HMD 002 (8541) Haematology: fellowships (1972-74) UNDP

HMD 098 Health manpower development: fellowships (1974) UNDP

HMD 099 Lecturers and fellowships (1974-) R

CEP 001 (3101) Czechoslovak research and development centre for environmental pollution control (1969-) UNDP—To establish in Bratislava a federal research and development centre for environmental pollution control, with subcentres in Prague and Bratislava.

Denmark

HMD 099 Lecturers and fellowships (1974-) R

Finland

HMD 099 Lecturers and fellowships (1974-) R

France

HMD 099 Lecturers and fellowships (1974-) R

German Democratic Republic

HMD 099 Lecturers and fellowships (1973-) R

Federal Republic of Germany

HMD 099 Lecturers and fellowships (1974-) R

Greece

HMD 002 (4501) Higher technical education centre (KATE) (1973-76) UNDP/UNESCO—To develop the health services component of the project. WHO is providing assistance in teacher training and in the production of teaching and reference materials.

HMD 099 Lecturers and fellowships (1974-) R

BSM 001 (3401) Environmental sanitation (1967-) UNDP—To assess solid waste disposal problems in urban areas through a general review, followed by a specific study of one or two cities where the situation is more acute.

CEP 001 (3101) Environmental pollution control, metropolitan area, Athens (1971-76) UNDP—To develop a comprehensive environmental pollution control programme for the Athens metropolitan area.

Hungary

HMD 001 (7941) Toxicology: fellowships (1971-74) UNDP

HMD 099 Lecturers and fellowships (1974-) R

LAB 001 (4201) Public health laboratories (1971-74) R—To improve health laboratory facilities by introducing or extending the application of new diagnostic procedures and investigating the possibility of producing new biological substances.

PIP 001 (3101) Pilot zones for water quality management (1969-) UNDP—To establish pilot zones for water quality management, with a view to collecting data and developing a rational basis for investment in water quality improvement.

Iceland

HMD 001 (4401) Nursing education (1974-) R—To develop an experimental university programme in basic nursing, and to plan patient studies with a view to a more rational utilization of nursing resources, especially in hospitals.

HMD 099 Lecturers and fellowships (1974-) R

Ireland

HMD 099 Lecturers and fellowships (1974-) R

Italy

SHS 001 (4101) Reorganization of regional public health services (1972-) R—To reorganize the health and medical services in the Friuli-Venezia-Giulia region.

HMD 001 (4401) Nursing education and administration (1960-65; 1967; 1969-75) R—To prepare nurses for teaching and administrative posts and develop basic and postbasic nursing education programmes.

HMD 002 (4402) Postbasic and continuing education for nurses, Lombardy region (1974-) FT—To develop a postbasic school of nursing sciences at the Institute of Hygiene, University of Milan; to organize a centre of continuing education for the supplementary training of nursing personnel to enable them to carry out new functions; and to develop public health practice areas for students of both institutions.

HMD 099 Lecturers and fellowships (1974-) R

Malta

HMD 001 (4802) Training in physiotherapy (1974-) UNDP—To ensure an efficient physiotherapy service and provide training in physiotherapy.

HMD 098 Fellowships (1974) UNDP

HMD 099 Lecturers and fellowships (1974-) R

Morocco

SHS 002 (8401) Public health ophthalmology (1974-) R—To promote comprehensive services to prevent loss of vision and blindness caused by communicable and noncommunicable diseases, with special attention to long-term planning of such services and to strengthening the central public health ophthalmological service and the national institute of ophthalmology.

MCH 001 (5101) Maternal and child health services (1972-) R VG—To carry out studies and operational research on different aspects of maternal and child health, with special attention to the role of health services in rural areas. Related aspects of medical education and training, and general environmental aspects, will be included in the studies.

HMD 001 (6201) Medical education (1960-64; 1966-) R—To strengthen teaching and research in preventive and social medicine and in the basic medical sciences at the Faculty of Medicine, Rabat, and to train national staff.

HMD 099 Lecturers and fellowships (1974-) R

ESD 001 (1001) Surveillance and control of communicable diseases (1970-) R—To assess the extent of the communicable diseases that are major public health problems in the country, especially salmonellosis, venereal diseases, cerebrospinal meningitis and leprosy, with a view to implementing effective and economical control measures.

MPD 001 (2001) Malaria pre-eradication programme (1962-) R—To prepare for a malaria eradication programme by the organization of technical, administrative and operational services; and to train medical and allied personnel of public health services (especially rural health services) in malaria eradication concepts and techniques.

MBD 001 (1201) Tuberculosis control (1971-74) R—To develop a national tuberculosis control programme integrated into the general health services.

BSM 001 (3003) Environmental hygiene (1971-74) UNDP—To draw up a comprehensive environmental sanitation programme for the whole country, applying methods in a number of pilot areas and developing approaches to specific problems, such as waste disposal, in preparation for a later project. Provided—a sanitary engineer (Jan. 1972-Feb. 1974) and a sanitarian (Jan. 1971-July 1973).

The project, which was a continuation of the environmental health project assisted by WHO between 1958 and 1970, developed satisfactorily. An environmental hygiene office was set up under the direction of national sanitary engineers; a coherent plan for the training of sanitarians was drawn up; well-trained sanitarians were posted to provincial health services; and a comprehensive programme for environmental sanitation work at the national level was prepared.

The project activities will be followed up under the project for the training of sanitary engineers (Morocco SES 001 (3002)).

PIP 001 (3201) Water supply and related studies, phase II (1969-73) UNDP—To prepare a master plan for national and regional water supplies, and pre-investment studies on water supply and waste disposal in the coastal region between Kénitra and Casablanca and on water supply for one or two towns in the remainder of the country. The project included economic and organizational studies as well as the training of personnel. It followed a first phase (1967-69) during which water supply studies for the coastal region were made. Provided—a project manager and a secretary (1969-73), 5 consultants for a total

of 5 months, contractual services, 6 fellowships, and supplies and equipment.

The following work was carried out: (i) master plan for water supplies, to cover national needs up to the year 2000; (ii) regional master plan and preliminary engineering and feasibility studies for water supplies for the coastal region; (iii) preliminary engineering and feasibility studies for sanitation and liquid and solid wastes disposal for the towns of Rabat and Salé; (iv) studies of the administrative, legislative, economic and operational aspects of the provision of water supplies.

All the above work was accomplished within the period specified. A national water supply office was set up and the Government has obtained a loan from IBRD for construction of water supplies for the coastal region.

PIP 002 (3202) Water supply studies, phase III (1973-) UNDP—To extend the organizational studies begun under project PIP 001 (3201) to other priority regions of the country, aiming at ensuring a sufficient supply of drinking-water for the next decades.

SES 001 (3002) Training of sanitary engineers (1968-) R—To train sanitary engineering teaching personnel and specialists at university level.

SES 002 (3004) Development of environmental health services (1974-) UNDP—To set up a technical and administrative structure at provincial level, employing sanitary engineers and sanitarians trained under 2 preceding UNDP-assisted projects; to train further sanitarians for this purpose and prepare a guide to help them in their practical work; to improve environmental hygiene conditions in pilot demonstration areas; and to provide technical support to the central service for environmental sanitation in the Ministry of Public Health.

Netherlands

HMD 099 Lecturers and fellowships (1974-) R

Norway

HMD 099 Lecturers and fellowships (1974-) R

Poland

HMD 099 Lecturers and fellowships (1974-) R

MBD 001 (1201) Tuberculosis control (1960-74) UNDP UNICEF—To carry out tuberculosis control work, to follow up the results of the studies carried out since 1964 on the detection and treatment of new cases in pilot tuberculosis control areas, and to carry out studies on the epidemiology of tuberculosis in Poland and tests on the immunogenic value of BCG vaccine.

MNH 001 (5401) Mental health (1967-74) UNDP—To provide training in child mental health and the rehabilitation of psychiatric patients in order to strengthen the mental health services.

CEP 001 (3102) Environmental pollution abatement centre, Katowice (1971-) UNDP—To promote the control of air and water pollution, liquid and solid wastes treatment and disposal, and water and air quality management.

HWP 001 (5201) Industrial toxicology (1973-76) UNDP—To consolidate and develop the work of the Institute of Occupational Health at Lodz by expanding its facilities for the monitoring and study of the adverse effects of exposure to noxious substances in industry; by building it up to act as a national centre for

Poland (*continued*)

research, development, training and services in health surveillance of workers exposed to industrial toxic chemicals; and by establishing a comprehensive toxicology information system.

Romania

HMD 004 (6302) Medical education (1974-) R—To develop teacher training programmes and introduce new methods in medical education.

HMD 099 Lecturers and fellowships (1974-) R

CEP 002 (3102) Water and air pollution control, phase II (1971-75) UNDP—To establish a programme for air and water pollution control, carry out studies on various aspects of pollution, methods of treatment and control, and train personnel.

The activities completed under phase I were reported in *Official Records* No. 205 (page 256).

Spain

SHS 001 (4001) Health demonstration and training area (1974) UNDP—Fellowships were awarded under this project, for which consultant services, fellowships, and supplies and equipment were provided between 1965 and 1971.

HMD 001 (6101) Training of health personnel (1971-74) R—To prepare teachers and develop teaching institutions for various categories of health workers, particularly sanitarians and laboratory technicians.

HMD 002 (4401) Nursing education and nursing service administration (1957; 1960-64; 1971-75) R—To develop and strengthen postbasic and basic nursing education programmes by preparing nurses for administrative and teaching posts in basic and postbasic schools of nursing and in nursing services.

HMD 003 (6201) Medical education (1971-) R—To improve medical education by developing curricula and methods of teaching and evaluation, with emphasis on new faculties, carrying out relevant studies, and providing training facilities abroad for the study of medical education.

HMD 099 Lecturers and fellowships (1974-) R

VIR 001 (1901) Epidemiological studies of virus diseases of public health importance (1959; 1964-69; 1971-74) UNDP—To study methods for the prevention and control of enteric, respiratory and other virus diseases of public health importance and to provide training facilities.

MNH 001 (5401) Mental health services (May-June 1974) UNDP—A consultant advised on the possibility of converting tuberculosis sanatoria into rehabilitation establishments for chronic psychiatric patients or residential centres for chronically disabled mentally retarded children and adults.

CEP 003 (3103) Air pollution control in urban industrialized areas (1974-) UNDP—To lower the concentration of atmospheric pollutants in the Bilbao region (Nervión River valley) by reducing the emission from industrial sources, with the ultimate aim of achieving a national approach to the control of air pollution in industrial areas throughout the country.

CEP 004 (3104) Control of pollution in rivers and coastal waters (1974-) UNDP—To establish criteria for the standard of hygiene in rivers and coastal waters for the use of sanitary engineers in Guipúzcoa Province, with the ultimate aim of achieving a national approach to the control of river and coastal water pollution by land sources.

Sweden

HMD 099 Lecturers and fellowships (1974-) R

Switzerland

HMD 099 Lecturers and fellowships (1974-) R

Turkey

SHS 001 (4001) Development of public health services and training of personnel (1970-) R UNICEF—To strengthen national health services at the central, regional, and peripheral levels.

HRP 001 (9601) Maternity-centred family planning programme (1974) UNFPA—A consultant (3 months) assisted in formulating a project request.

HMD 002 (4441) Nursing education: fellowships (1955-67; 1969; 1971-75) R

HMD 099 Lecturers and fellowships (1974-) R

ESD 001 (1001) Surveillance and control of communicable diseases (1973-75) R—To assess the extent of the communicable diseases presenting serious public health problems and plan control measures.

MPD 001 (2001) Malaria eradication programme (1957-) R

VPH 001 (2801) Development of field veterinary services and regional diagnostic centres (Jan. 1974) UNDP/FAO—A consultant gave lectures on leptospirosis and supervised practical work at a training course for veterinary and technical personnel.

BSM 001 (3001) Environmental sanitation (1964-) R—To develop the environmental sanitation services and train sanitation personnel.

CEP 001 (3101) Protection of the environment against pollution, Ankara (1973-75) UNDP—To develop a comprehensive plan for environmental pollution control and to facilitate the incorporation of environmental considerations in the planning of industrial development and urbanization.

SES 001 (3002) Promotion of training and programmes in sanitary engineering, Middle East Technical University, Ankara (1968; 1970-73) R UNDP—To train environmental health personnel at professional and subprofessional levels at the Sanitary Engineering Department, Middle East Technical University, and to promote specific environmental health programmes in various government agencies. Provided—a sanitary engineer (Oct. 1971-Sept. 1973), a long-term fellowship, and laboratory and teaching equipment.

A request for the assignment of a professor of sanitary engineering, made in 1968, was approved for 1 year in July 1969, but the project could not be implemented owing to recruitment difficulties. In 1969 a new request was approved for a small-scale project, concentrating on the promotion of training and programmes at the Middle East Technical University. Under this project, training programmes were established, training courses were given, and advice was provided on the solution of environmental pollution problems.

Before the termination of the project, a government request for a larger project was approved by UNDP (see Turkey SES 003 (3004) below).

SES 002 (3003) Promotion of training and programmes in sanitary engineering, Istanbul Technical University (1970-74) UNDP—To train environmental health personnel at professional and subprofessional levels at the Istanbul Technical University and to promote specific environmental health programmes in various government agencies.

SES 003 (3004) Development of training and research facilities in sanitary engineering, Middle East Technical University, Ankara (1973-) UNDP—To meet the increasing needs for professional engineers, specialized in sanitary or environmental engineering, who will assist the Government in planning and implementing programmes in environmental sanitation and water supply through public and private undertakings.

The project is a continuation and extension of project Turkey SES 001 (3002).

4241 Public health laboratory services (1967-73) R UNDP—Two staff members and a consultant visited Turkey in 1967, 1969 and 1971 respectively to advise on the organization of laboratory services and the training of personnel. In addition, 6 fellowships were awarded (2 in 1967, for study of the construction and organization of laboratories; 2 in 1971, in virology and clinical chemistry; and 1 in 1973, in immunochemistry and general clinical chemistry).

Union of Soviet Socialist Republics

HMD 099 Lecturers and fellowships (1974-) R

United Kingdom of Great Britain and Northern Ireland

HMD 099 Lecturers and fellowships (1974-) R

Yugoslavia

SHS 001 (4101) Public health administration (1969-) UNDP—To provide training facilities and equipment for the federal and republic institutes of health.

SHS 002 (4102) Regionalization of health services and health insurance in Serbia (1972-73) R—To establish a functional organization of health services, backed by a suitable insurance scheme. WHO provided 2 consultants (in health economics and organization of medical care) (April and June/July 1972 and Feb./March 1973), 5 fellowships, and a research grant for studies in public health practice, and contributed to the part-time services of a health statistician. The regional health officer concerned visited Yugoslavia several times for detailed discussions. The report has been submitted to the Serbian Parliament.

MCH 001 (5141) Maternal and child health: fellowships (1971-74) UNDP

HMD 099 Lecturers and fellowships (1974-) R

OCD 001 (8001) Chronic and degenerative diseases: fellowships (1965-66; 1969-74) UNDP

PIP 001 (3201) Community water supply, waste disposal and pollution control, Kosovo (1967-69; 1972-76) UNDP—To develop a programme for water pollution control, community water supply and wastes disposal in Kosovo Province.

Intercountry Programmes (EURO)

SHS 001 (4001) Symposium on the Functions of Central Institutes of Public Health and Hygiene, Moscow (11-14 Dec. 1973) R—To define the place of central institutes of public health in the overall system of information and advice, examine the possible advantages of utilizing these bodies, and define the status, structure and range of duties most suited to the role assigned to them. The Symposium, which was a continuation of the study on the role of central institutes of public health and hygiene carried out in 1970 and 1971, had 16 participants from 13 countries of the Region and an observer. Provided—a consultant, 4 temporary advisers, the cost of attendance of 13 participants, and the services of 3 staff members.

SHS 003 (4407) European studies in nursing, midwifery and medicosocial work (1972-74) R—To carry out studies of specialized fields of nursing, midwifery and medicosocial work in which changes are taking place rapidly, and of patterns of nursing administration, medicosocial work and midwifery services in European countries; also to assist countries wishing to hold meetings and to undertake surveys and studies in nursing education, nursing personnel systems and patient care. The project followed up the studies on advanced nursing education and on nursing resources and staffing patterns (projects EURO 4401 and 4404).

A working group met in Copenhagen from 25 February to 1 March 1974 to discuss research and related information systems in nursing and midwifery in Europe. Provided—2 consultants, the cost of attendance of 8 participants (temporary advisers) and the services of 3 staff members.

SHS 005 (7405) Working Group on National Poison Control Services, Lyons, France (7-10 May 1974) R—To study the organization, responsibilities and functions of a comprehensive poison control service, with particular reference to epidemiological studies, information services, preventive measures, hospital and laboratory facilities, and research; and to discuss international collaboration. The Group based its work on a survey of poison control services existing in the Region. Provided—a consultant, the cost of attendance of 8 participants (temporary advisers), and the services of 5 staff members. A representative of the Organization for Economic Cooperation and Development attended the meeting.

SHS 006 (4905) Epidemiological studies (1966-) R—To study and report on specific aspects of mortality and morbidity of particular interest to the Region, starting with a study among cases of stomach cancer. If appropriate, the findings will be presented to the annual sessions of the Regional Committee for Europe. Also, to coordinate and assist limited intercountry studies on relevant epidemiological subjects, including the epidemiology of stomach cancer, the occurrence of abortions, the occurrence of suicide, and chronic respiratory diseases.

A working group on epidemiological surveillance of long-term health effects of environmental hazards met in Copenhagen from 24 to 26 September 1974. Provided—the cost of attendance of 6 participants (temporary advisers) from 6 countries of the Region, and the services of 7 staff members.

SHS 007 (4915) Postgraduate training in epidemiology and medical statistics (1973-) R—To provide lecturers and fellowships for the annual courses on epidemiology and medical statistics that have been given since 1963 in English and French and since 1965 in Russian.

The French-language course on methods of medical statistics and epidemiology was again held in Brussels (1 Feb.-31 May

Intercountry Programmes (EURO) (continued)

1974). Provided—3 fellowships under this project and 2 under other projects.

The Russian-language course on the application of statistical and epidemiological methods to medicine and public health was again held in Bratislava, Czechoslovakia (5 Sept.–Dec. 1974). Provided—2 fellowships under this project and 5 under other projects, and the services of 4 staff members as lecturers.

The English-language course on vital and health statistics, usually given by the London School of Hygiene and Tropical Medicine and the Office of Population Censuses and Surveys (formerly the General Register Office), London, was not held in 1974.

At a working group that met in Brussels on 13 and 14 May 1974 to evaluate the courses, the directors of the courses discussed and compared curricula and teaching methods. Provided—the cost of attendance of the participants and the services of 6 staff members.

SHS 008 (4101) Advanced training courses on health planning: meeting of course directors, Copenhagen (27-29 May 1974) R—The directors of the 5 courses held between 1969 and 1973 met to discuss the possible continuation of the courses. Provided—3 temporary advisers and the services of 2 staff members.

SHS 009 (4102) Documentation on public health, including health planning, economics and manpower (1970-73) R—To continue assistance to national and regional health administrators by documenting the experience acquired in short-term and long-term planning of health services and health manpower in the Region. This was the original aim of the project, under which, later, provision was made for the issue of a publication entitled *Public Health in Europe*.

The first task, undertaken with the assistance of 2 temporary advisers, was the compilation of some 400 references, in Russian, on health planning and health economics in Eastern European countries (information not published by the Excerpta Medica Foundation). Excerpta Medica, in return for a subscription on behalf of all European ministries of health for 1970, undertook to abstract material from the final reports of the Regional Office for their publications. In addition, abstracts of books and articles on health planning and health economics in countries of Eastern Europe, prepared by a temporary adviser, were distributed.

In 1972, 3 representatives from federal Member States (Czechoslovakia and Yugoslavia) visited the Regional Office to discuss dissemination of information on WHO activities.

The first issue of *Public Health in Europe*, published in 1972 with the assistance of a temporary adviser, was on the subject of health planning and organization of medical care. It was followed in 1973 by a second on chronic diseases and, in 1974, by a third on communicable diseases.

The production of *Public Health in Europe*, in English, French and Russian, will continue under the general publications programme of the Regional Office; whereas studies on health planning and related subjects in European Member States will continue as part of the regional programme on strengthening of health services.

SHS 010 (4105) Studies on health planning in European countries with different systems of health care (1973-) R—To prepare and disseminate information on different systems of health planning and health economics. The studies will be based on areas selected by the Working Group on Problems of Health Planning in National Development, which met in 1972 (project EURO 4104), and will cover health economics, national economic development, health planning and public health administration at national levels, with special attention to health manpower.

SHS 011 (4107) European Conference on National Health Planning, Bucharest (12-16 March 1974) R—To review the present situation in regard to health planning and discuss the place of epidemiology in studies on health planning and economics. The conclusions and recommendations of the 1972 Working Group of Problems of Health Planning in National Development (EURO 4104) were taken into consideration, as well as the experience of European countries in different methods of health planning. The Conference discussed the evaluation of the advanced courses on health planning given in English, French and Russian and made recommendations for post-graduate training in health planning at the national and regional levels. There were 46 participants and 5 observers. Provided—2 consultants, 9 temporary advisers, the services of 10 staff members, and the cost of attendance of 25 participants.

SHS 012 (4108) Seminar on Health Aspects of Urban Development, Stuttgart, Federal Republic of Germany (3-7 Dec. 1973) R—To discuss the relationship between different systems of health administration and of urban planning in the medium-sized cities (up to 1 million population) in the Region. Aspects of the discussions included the identification of current and possible future social, economic and cultural trends affecting the urban environment and determination of the response to be expected from local health and environmental planning services. Attention was paid to pollution, sanitary services, population migration and overcrowding, and to available resources. The central theme of discussion concerned management methods and forms of coordination to ensure the effective use of health and environmental planning services and manpower in the contemporary urban context. There were 34 participants from 25 countries of the Region and representatives of ECE, the Commission of European Communities, the Council of Europe, and the International Union of Local Authorities, as well as 9 observers. Provided—6 temporary advisers, the services of 7 staff members, and the cost of attendance of 24 participants and of a representative of an international organization.

SHS 018 (4306) Consultant services on the organization of community health care (1972-73) R—To meet requests, sometimes of an urgent nature, for expert advice on specialized aspects of medical services, and to assist in national and international conferences and seminars in this field.

In May 1972 a consultant visited Iceland to advise on the education of physiotherapists and occupational therapists. In May 1973, 3 temporary advisers lectured at a national seminar held in Zagreb, Yugoslavia, for officials and members of management groups. In December 1973 a consultant visited Poland to give advice in connexion with a study on health services being carried out in Warsaw.

SHS 020 (4310) Studies on hospital and other aspects of community health care (1974-) R—To investigate the following aspects of community health care: its effectiveness in reducing general morbidity; the relationship between hospital, psychiatric, rehabilitative, long-term and other forms of community care and the methods used to ensure communication and coordination between them; types of hospital, their size and the area they serve; the introduction of automated procedures; the community care of special groups of patients; and the personnel concerned in urban and rural areas.

SHS 021 (4803) Working Group on Rehabilitation in Long-term and Geriatric Care, Copenhagen (18-22 Feb. 1974) R—To study trends in the development of rehabilitation services in the field of long-term care, including geriatrics, in Europe. Consideration was given to the needs of young victims of road

accidents, of those suffering from degenerative diseases, and of special groups such as sufferers from musculo-skeletal, cardiovascular and psychiatric conditions. The Group made use of the information on comprehensive rehabilitation collected in 1969 for the technical discussions at the twentieth session of the Regional Committee and of the findings of the working group on the subject held in 1970. Provided—a consultant, the cost of attendance of 6 participants (temporary advisers) and the services of 4 staff members.

SHS 023 (5704) Road accident prevention (1974-75) R—To study problems in road accident prevention, as requested by Member States, and to cooperate with other agencies concerned where joint action is required.

SHS 024 (8404) Study of different aspects of public health ophthalmology (1974-75) R—To study the prevention of loss of vision, provide technical guidance on comprehensive planning in ophthalmology, assess requirements for developing specialized ophthalmological services and integrating them into national public health services, and provide background material for inter-country meetings in this field.

During the period under review a consultant (3 weeks) made a preliminary assessment of the eye health situation in a defined area of Malta.

SHS 026 (OR 02) Training course on operational research in public health (in French), Louvain-la-Neuve, Belgium (19 Sept.–5 Oct. 1974) R—To provide health administrators with training in the techniques and application of operational research. Provided—fellowships to 10 trainees from 9 countries of the Region.

SHS 030 (CS 03) Study on various aspects of medical computing (1974-75) R—To study the cost/effectiveness of computer-based automation of clinical information systems.

SHS 032 (4916) Regional health information services (1974-) R—To sponsor and coordinate studies on health information systems, and to develop and operate the collection, processing, storage, retrieval and analysis of the information required by the Regional Office on health and related subjects.

A working group met in Copenhagen from 17 to 19 June 1974 to advise the Regional Office on additional national information that the Office should collect. Provided—the cost of attendance of the 7 participants (temporary advisers) and the services of 6 staff members.

SHS 056 (PS 03) Programme supporting services (strengthening of health services) (1974-) R—To meet requests from countries for advice on subjects for which no regional officer is available, and for organizing national activities to follow up intercountry projects sponsored by the Regional Office; to continue assistance to seminars and conferences conducted by the United Nations and other organizations whose work is of special interest to the Office; and to prepare and print reports on conferences, seminars and other meetings held by the Regional Office. (This project replaces activities under the former projects EURO CF 01, IC 01, RR 01, SC 01 and SC 02.)

MCH 001 (5101) Collaboration with international institutions concerned with family health (1965-) R UNICEF—To continue collaboration with the International Children's Centre (ICC) and other international organizations to enable staff of family health services to attend courses and meetings organized by these institutions, and to arrange for studies, surveys and bibliographical services in this field to be undertaken on a contractual basis.

The following took place during the period under review:

Two participants from countries of the Region attended the ICC seminar on the care of children of working parents (Paris, 3-5 Dec. 1973).

A working group, composed of temporary advisers and 3 representatives of the ICC, on the preventive and social aspects of paediatric teaching met in Copenhagen from 17-19 December 1973. Provided—the services of the temporary advisers and of 5 staff members.

For participation in the ICC course on social paediatrics (Paris, 22 April-23 June 1974), 2 fellowships were awarded to trainees from countries of the Region. Six trainees from other WHO Regions also attended, and lectures were given by a WHO staff member.

Four fellowships were awarded (partly under other projects) to trainees from 3 countries of the Region for attendance at the ICC course on maternal and child care (Paris, 21 Oct.-1 Dec. 1974). Five trainees from other WHO Regions also attended and a WHO staff member gave lectures.

MCH 003 (5106) Study on the present European situation in school health statistics (1974-) R—To collect information on systems suitable for continuous registration of data from well-baby clinics and from preschool and school health examinations.

During the period under review a consultant (1 week) collected information in Poland. Other countries will be visited in 1975.

HRP 002 (5104) Training in family health and family planning (1972-) UNFPA—To provide fellowships for training doctors and nurses in various aspects of family planning, including demographic studies.

A course (in French) in family health and family planning was held in Paris and Brussels from 17 January to 17 February 1974. Provided—fellowships to 7 trainees from 6 countries of the Region. Fellowships to 10 trainees from Algeria and 1 from Turkey were provided from other funds.

In November 1974, 3 temporary advisers and 2 staff members attended a one-day meeting at the International Children's Centre, Paris, to discuss the course planned for 1975.

HRP 003 (5105) Family health and family planning (1972-) UNFPA—To provide specialized technical advice and evaluation for family health and family planning activities, and carry out studies, as an integral part of UNDP country programmes; and to provide guidance for intercountry activities concerned with training, research and services for modern health care delivery (especially basic health services).

HRP 004 (5108) Conference on Trends in Maternal and Child Health, Moscow (11-15 Nov. 1974) UNFPA—To define new trends in maternal and child health work and their implications for health planning and staff training in countries of the Region. The Conference based its discussions on the conclusions of the Working Group on the Evaluation of Maternal and Child Health Services in Certain Countries of the Region, held in 1973 (under project EURO 5103). There were 34 participants from 28 countries of the Region and 4 countries of the Eastern Mediterranean Region, 9 observers, and representatives of the International Children's Centre, the International Confederation of Midwives, the International Paediatric Association, and the International Planned Parenthood Federation. Provided—2 consultants, 15 temporary advisers, the cost of attendance of 28 participants, and the services of 8 staff members.

NUT 002 (5605) Study on nutritional problems in Europe (1974-75) R—To review the current situation in nutrition, including education and research, in the countries of the Region;

Intercountry Programmes (EURO) (continued)

and to link the regional nutrition programme with other ongoing activities and maintain liaison with the international agencies concerned, such as FAO, UNICEF, WFP, the Protein Advisory Group of the United Nations System, and the International Union of Nutritional Sciences, which will be invited to participate.

HED 001 (4502) National courses, conferences and seminars in health education for senior health personnel (1968-75) R—To assist national courses, conferences and seminars for physicians and leading health personnel responsible for promoting health education and to facilitate the attendance of similar staff from neighbouring countries by the award of fellowships.

HED 002 (4503) Symposium on the Preparation of Health Personnel in Health Education, with special reference to Postgraduate Education Programmes, Cologne, Federal Republic of Germany (10-14 Nov. 1974) R—To bring together persons whose leadership and experience in health education in various countries of the Region would provide guidance to Member States in planning and improving the training of health personnel in health education, especially at postgraduate level. There were 13 participants from 13 countries of the Region and 6 observers. Provided—a consultant, 4 temporary advisers, and the services of 3 staff members.

HMD 001 (PS 05) Programme supporting services (health manpower development) (1974-) R—To meet requests from countries for advice on subjects for which no regional officer is available and for organizing national activities to follow up intercountry projects sponsored by the Regional Office; to continue assistance to seminars and conferences conducted by the United Nations and other organizations whose work is of special interest to the Office; and to prepare and print reports of conferences, seminars and other meetings held by the Regional Office. (This project replaces activities under the former projects EURO CF 01, IC 01, RR 01, SC 01 and SC 02.)

HMD 002 (6001) Exchange of information on placement, supervision and follow-up of WHO fellows (1968-) R—To continue the exchange of experience between members of national health administrations and regional office staff and enable them to visit countries that have extensive experience in receiving WHO fellows and arranging their placement; and to supervise the placement of trainees from other WHO regions for studies in countries of the European Region.

HMD 003 (6201) Education and training for the health professions (1961-) R—To assist schools for health personnel in introducing new methods in education, in exchanging experience, and in obtaining information on various aspects of education in the health sciences.

HMD 005 (6007) Meeting of deans, teachers in medical schools, and senior administrators, Copenhagen (26-29 Nov. 1974) R—To demonstrate to deans of medical schools and senior administrators from ministries of health and education the urgent need for and advantages of cooperation between medical schools and ministries. There were 49 participants from 20 countries of the Region, 5 observers, and 2 representatives of the International Federation of Medical Student Associations. Provided—6 temporary advisers and the services of 5 staff members.

HMD 010 (4409) Training and preparation of educators in nursing, midwifery and medicosocial work (1974) R—To develop and strengthen existing European centres for the preparation

of teachers in nursing, midwifery and medicosocial work, and to promote teacher training schemes.

HMD 012 (6002) Working Group on Medical Teacher Training, Warsaw (1-5 April 1974) R—To promote the use of effective educational methods by studying the principles of the teaching and learning processes and evaluation techniques. Provided—the cost of attendance of the 11 participants (temporary advisers) and the services of 3 staff members. Four observers and a representative of the Association for Medical Education in Europe attended.

HMD 013 (6003) Workshop in Teaching Methods for Teachers of Social Medicine, Marseilles, France (16-27 Sept. 1974) R—To assist medical teachers in formulating the objectives of the teaching of social medicine and in developing experimental teaching programmes. There were 9 participants from 8 countries of the Region, 3 observers, and representatives of the International Children's Centre and the International Union against Tuberculosis. Provided—3 temporary advisers, the cost of attendance of 6 participants, and the services of 2 staff members.

HMD 018 (6301) Postgraduate training for the health professions (1965-75) R—To assist in organizing and improving postgraduate training for the health professions.

HMD 019 (6401) Course for public health administrators (in Russian), Moscow (15 Oct. 1973-15 July 1974; 15 Oct. 1974-15 July 1975) R—To assist several countries in training medical administrators for key posts, in a one-year postgraduate course. Provided—2 lecturers (temporary advisers) and the services of 2 staff members for the part of the 1973/74 course held in 1974, and fellowships for 2 trainees from 2 countries for the 1974/75 course. Two more trainees participated at their government's expense and 5 trainees from the South-East Asia Region attended.

The third scientific session of the Moscow international courses was held in Warsaw from 27 to 29 May 1974. Provided—7 temporary advisers from 6 countries of the Region, the services of a headquarters staff member, and interpretation facilities.

HMD 021 (6008) Working Group on Examinations and the Grading of Student Performance, Copenhagen (13-17 May 1974) R—To discuss objective testing of academic competence of medical students at both graduate and undergraduate levels of instruction. Provided—the cost of attendance of the 8 participants (temporary advisers) and the services of 2 staff members.

HMD 034 (4412) Planning meeting on a medium-term programme in nursing and midwifery in Europe, Kiel, Federal Republic of Germany (22-24 Oct. 1974) VD—To formulate clear definitions of the functions of nursing in current and future health services, in response to requests made at the twenty-third session of the Regional Committee for Europe, held in Vienna in September 1973. The purposes of the meeting were to identify major problems in nursing and midwifery services and education; from these, to select a manageable number and propose courses of action at country and intercountry levels for solving them; and to advise the Regional Director on the development of a medium-term programme in nursing and midwifery in Europe and the establishment of a permanent intercountry steering committee. There were 17 participants from 9 countries of the Region and an observer. Provided—a consultant, the cost of attendance of 16 participants (temporary advisers), and the services of 3 staff members.

PPC 001 (PS 01) Programme supporting services (communicable disease prevention and control) (1974-) R—To meet requests

from countries for which no regional officer is available and for organizing national activities to follow up intercountry projects sponsored by the Regional Office; to continue assistance to seminars and conferences conducted by the United Nations and other organizations whose work is of special interest to the Office; and to prepare and print reports on conferences, seminars and other meetings held by the Regional Office. (This project replaces activities under the former projects EURO CF 01, IC 01, RR 01, SC 01 and SC 02.)

ESD 001 (1001) Development of national programmes for the surveillance of communicable diseases (1970–) R—To assist countries in initiating or developing national programmes for the surveillance of communicable diseases of public health importance and to stimulate, assist and coordinate intercountry cooperation and exchange of information in this field.

During the period under review 6 temporary advisers from 6 countries of the Region took part in the fourth consultation on pilot programmes for intensified surveillance of poliomyelitis in selected countries, held in Geneva on 13 and 14 November 1974.

ESD 002 (1002) Conference on the Prevention of the Intercountry Spread of Infectious Diseases, Izmir, Turkey (3-7 June 1974) R—To appraise the efficacy of national procedures and legislative provisions in the Region for preventing the importation of infectious diseases; and to propose measures to diminish the risk of infection created by the ever-increasing movement of people, foodstuffs and animal feeds between countries. There were 31 participants from 25 countries, 4 observers, and a representative of the International Air Transport Association. Provided—5 temporary advisers and the services of 8 staff members.

MPD 001 (2001) Malaria eradication evaluation and epidemiological assessment (1962–) R—To assist malaria epidemiological assessment; to coordinate studies and activities relating to the importation of malaria (including the delimitation of receptive and vulnerable areas) and to the epidemiological, parasitological and clinical aspects of imported malaria; and to disseminate relevant information to the countries concerned.

MPD 002 (2004) Meeting for coordinating malaria eradication, Algiers (4-6 Dec. 1973) R—To permit countries of the Region that are concerned with the eradication, control or prevention of malaria to exchange views and coordinate programmes or activities for preventing the reintroduction of the disease. There were 10 participants and a number of observers from Algeria. Provided—the cost of attendance of 4 participants and the services of 4 staff members.

MPD 003 (2006) Entomological services to countries of the Region (1973–) R—To continue the entomological assistance provided since 1965 to North African and other countries of the Region under project EURO 2002 in connexion with malaria eradication campaigns, and to extend it to arthropod-borne diseases in general.

MBD 001 (1205) Development of national tuberculosis control programmes (1974) R—To assist countries in developing certain aspects of their tuberculosis control programmes and in evaluating the effectiveness of these programmes.

VIR 002 (8401) Trachoma control and prevention of loss of vision (1958-74) UNDP—To provide specialized technical advice on the further development of communicable eye disease

control projects in several countries of the Region, and to study the need for general sight-saving programmes in these and other countries.

PPN 001 (PS 04) Programme supporting services (noncommunicable disease prevention and control) (1974–) R—To meet requests from countries for advice on subjects for which no regional officer is available and for organizing national activities to follow up intercountry programmes sponsored by the Regional Office; to continue assistance to seminars and conferences conducted by the United Nations and other organizations whose work is of special interest to the Office; and to prepare and print reports on conferences, seminars and other meetings held by the Regional Office. (This project replaces activities under the former projects EURO CF 01, IC 01, RR 01, SC 01 and SC 02.)

CAN 001 (8102) Study on cancer control (1972-75) R—To devise methods for comprehensive control of cancer and test their feasibility in pilot areas where there is an interest in developing control programmes.

CVD 001 (8201) Establishment of ischaemic heart disease registers (1968-75) R—To prepare a simplified registration system for the notification and continued surveillance of ischaemic heart disease in the population of a selected area, with a view to procuring accurate and comparable data on different aspects of the disease and on medical care of patients.

A working group met from 25 to 28 March 1974 to discuss a simplified registration system and continued surveillance of ischaemic heart disease. Provided—a consultant, the cost of attendance of the 19 participants (temporary advisers) and the services of 5 staff members. There were 8 observers.

CVD 002 (8202) Studies on the prevention of ischaemic heart disease (1968–) R—To follow up previous prevalence surveys, stimulate activities and achieve a better knowledge of the etiology and prevention of ischaemic heart disease.

An *ad hoc* meeting of investigators of the European multifactor preventive trials of ischaemic heart disease was held in Rome from 11 to 13 March 1974. There were 10 participants and an observer. Provided—the cost of attendance of 5 participants (temporary advisers) and the services of a staff member.

CVD 003 (8204) Study on the evaluation of coronary care (1968–) R—To assess the value and cost to the community of coronary care services by estimating the frequency of cardiac emergencies requiring such services in defined areas, assessing the cost and staffing needs, and evaluating reports on the reduction of mortality.

CVD 004 (8205) Training in coronary care (1968–) R—To provide for the individual training of doctors and other health personnel in intensive coronary care and its organization in selected units; and for the participation of lecturers in national courses on coronary care.

CVD 005 (8206) Study of the effects of rehabilitation and secondary prevention in patients with cardiovascular diseases (1968–) R—To carry out controlled coordinated studies on the effects of rehabilitation in patients with cardiovascular diseases, its possible influence in preventing later incapacity, and factors that may result in a relapse or affect length of life.

A working group on the evaluation of studies of comprehensive rehabilitative and preventive programmes for patients with myocardial infarction met in Turku, Finland, from 27 to 30 May 1974. There were 32 participants. Provided—a consultant, the cost of attendance of 24 participants (temporary advisers) and the services of 2 staff members.

Intercountry Programmes (EURO) (continued)

CVD 007 (8208) Training in the rehabilitation of patients with cardiovascular diseases (1968-) R—To provide for training in the rehabilitation of patients with cardiovascular diseases.

CVD 008 (8209) Health education of the public in cardiovascular diseases (1968-) R—To study ways of improving the effectiveness and assessing the results of health education in cardiovascular diseases.

CVD 009 (8210) Evaluation of progress in the regional cardiovascular diseases programme (1971-) R—To collect information and evaluate progress on the various projects of the programme, and to suggest changes where necessary. Systems of data collection and retrieval in community cardiovascular disease control programmes will be studied in close collaboration with national coordinating units.

CVD 010 (8212) Study on cerebrovascular diseases (1971-) R—To develop methods to enable public health authorities to assess the extent of the cerebrovascular disease problem in the community and provide reliable data for planning services for its control.

CVD 012 (8215) Organization of congenital heart disease services (1974-) R—To establish the technical means and practical organization needed for the early detection of congenital heart disease, on the basis of the conclusions of a working group (project EURO 8213) held in 1971; to determine the staffing, budgetary and hospital-bed requirements; and to assess the degree of priority to be given to this work in relation to work on other handicaps and chronic diseases within the framework of health services.

CVD 013 (8216) Application of cardiovascular disease control measures to community health services (1974-) R—To apply data collected by local or national centres and by WHO in the way most beneficial to the community, with a view to promoting cardiovascular disease control programmes through existing medical care organizations.

A meeting of the steering committee of the regional community-oriented cardiovascular diseases control programme was held in Copenhagen on 8 and 9 June 1974. Provided—the cost of attendance of the 6 participants (temporary advisers) and the services of 6 staff members.

A consultation on comprehensive cardiovascular control programmes was held in Geneva from 28 to 30 November 1974. There were 9 participants from 7 countries and 4 observers. Provided—the cost of attendance of the participants and the services of staff members.

CVD 016 (8219) Training in the organization of cardiovascular control programmes (1973-) R—To provide facilities for training administrative, medical and other health personnel in the methods and techniques essential for establishing and running cardiovascular disease control programmes on a community basis.

CVD 017 (8220) Control of rheumatic fever and rheumatic heart disease (1974-) R—To provide advisory services for countries where rheumatic fever is still a problem and rheumatic heart disease still occurs.

OCD 002 (8002) Study on nomenclature for chronic non-specific lung diseases and methods for their diagnosis (1974) R—To review the nomenclature and the methods used for diagnosing chronic nonspecific lung diseases in different countries, with a view to standardizing them and ensuring the comparability of reported data, in particular for the long-term programmes.

A working group met in Brussels from 1 to 3 July 1974 to examine proposals for standardizing nomenclature and establishing a glossary of terms to serve as a basis for future activities in this field. Provided—the cost of attendance of 9 participants (temporary advisers) and the services of 2 staff members. Three observers attended.

DNH 001 (5507) Course on methods for epidemiological surveys of oral conditions (in Russian), Moscow (13 May-4 June 1974) R—To provide training in the methods to be used in surveys of dental conditions and in evaluating the output of dental services. The course, the third of a series, had 10 trainees from 8 countries of the Region and 2 from other WHO regions. Provided—fellowships to 3 trainees from 3 countries of the Region and 2 lecturers.

DNH 002 (5508) Study on the training and use of auxiliary dental personnel in Europe (1973-74) R—To collect, in countries of the Region, data on the number and classification of dental auxiliaries, their training programmes, the scope of their work, and the form of their employment in the dental health services. In 1973, 2 consultants prepared a questionnaire, which was checked in a trial before being sent to 26 countries of the Region. On the basis of the data received, 19 comparative tables were prepared, and an analysis was made of the problems involved. Recommendations were formulated in a final report which will be published in 1975.

DNH 003 (5510) Advisory services in dental health (1974-) R—To guide dental health activities, carry out studies with a view to supplementing the available information on various aspects of dental health systems in the Region, and prepare a monograph on European dental health services. Assistance to Member States may also be provided.

During the period under review a consultant (11 weeks) reviewed and finalized documentation on the dental health situation in the Region.

MNH 001 (5413) and 021 (5411) Joint Steering Committee on Planning and Control of Long-term Programmes in Child and Adolescent Mental Health and in Alcoholism and Drug Dependence, Copenhagen (21-22 Jan. 1974) R—To consider past and future activities in the long-term programme in alcoholism and drug dependence and the mental health of adolescents and young people. The group endorsed in general lines the programme originally proposed by the Regional Office for 1970-75 and its extension to the period 1976-80. There were 7 participants (temporary advisers) from 7 countries of the Region (representing general and child psychiatry, public health administration, sociology, psychology and health education), and representatives of the United Nations Division of Social Affairs and the International Narcotics Control Board, the International Council on Alcohol and Addictions, and the International Union for Child Welfare. Provided—7 temporary advisers and the services of 4 staff members.

MNH 002 (5426) Symposium on Mental Disorders in the Elderly, Munich, Federal Republic of Germany (1-15 April 1974) R VD—To consider measures that would enable elderly patients whose illness includes a significant psychiatric component to be supported in the community rather than admitted to a mental hospital in cases where the admission would be determined by social or economic rather than by medical or psychiatric reasons. The Symposium was a follow-up of the study undertaken by the Regional Office in 1971 in 9 pilot areas in different countries (project EURO 5421). There were 24 participants (psychiatrists, scientists, administrators, nurses, gerontologists, sociologists,

and psychogeriatricians) from 20 countries of the Region, 5 observers, and representatives of the Council of Europe, the International Committee of Catholic Nurses, the International Council of Nurses, and the World Psychiatric Association. Provided—5 temporary advisers, the services of 3 staff members, and the cost of attendance of 20 participants.

MNH 007 (5453) Working Group on Mental Health Services in Pilot Study Areas, Trieste, Italy (24-26 Sept. 1974) FT—To discuss the continuation of the work undertaken in the context of the pilot study areas established around mental health services in selected countries, and in particular the implementation of the programme designed to improve data collection systems and to test and analyse appropriate methods for planning, monitoring and evaluating services. There were 21 participants from 9 countries of the Region and 6 observers. Provided—the cost of attendance of 18 participants (temporary advisers) and the services of 2 staff members.

MNH 011 (5420) Course in mental health epidemiology and statistics (in French), Brussels (4-15 June 1974) VD—To bring together psychiatrists and statisticians to discuss problems with a view to developing a better understanding of how they can work together in the planning and organization of national mental health services. Provided—fellowships to 9 trainees from 9 countries of the Region. Three other trainees attended at the expense of the Government of Belgium.

MNH 012 (5442) Study on updating and examination of national data on mental health services (1974) R—To follow up the study on classification and evaluation of mental health service activities (EURO 5402) by updating existing data, examining trends, and assessing progress in the development of national mental health services.

MNH 014 (5444) Study on mental health services manpower demography (1974) R—To expand the data on the various categories of manpower in mental health services obtained through the long-term study on classification and evaluation of mental health service activities; and to investigate the demographic characteristics, such as age and sex, of psychiatric manpower and compare them with the same characteristics in other medical specialties.

MNH 015 (5446) Conference on Suicide and Attempted Suicide in Young People, Luxembourg (19-23 Aug. 1974) R—To consider the epidemiological features of suicide and attempted suicide in young people, with special reference to reporting procedures and regional variations within countries. The results of a survey made by the Regional Office in selected European countries in 1972 were available to the participants, together with the report of a working group held in 1973. There were 24 participants (from disciplines concerned with the prevention, detection and treatment of suicidal behaviour in young people) from 21 countries of the Region, 3 observers, and representatives of the Council of Europe, the International Union for Child Welfare and the World Psychiatric Association. Provided—8 temporary advisers, the services of 2 staff members, and the cost of attendance of 21 participants.

MNH 016 (5447) Study on youth advisory services (1974-75) R—To review the functions, organization, operation and staffing of youth advisory services in the light of experience gained in countries where they have been established. The study will provide the background information for a conference that it is proposed to hold in 1975.

MNH 027 (5455) Study on control of alcohol consumption (1974-) R—To study national policies for control of alcohol consumption. The study is being undertaken, mainly in Europe, in collaboration with the Finnish Foundation for Alcohol Studies, which is providing, over a period of 18 months, the services of a research worker to assist the Regional Office.

LAB 001 (4201) Public health laboratory services (1972-75) R—To assist in developing public health laboratory services and in organizing the training of laboratory staff; and to bring up to date the Directory of Public Health Laboratories in Europe and supplement it with information on training facilities in various laboratories in the Region.

PPE 001 (PS 02) Programme supporting services (promotion of environmental health) (1974-) R—To meet requests from countries for advice on subjects for which no regional officer is available and for organizing national activities to follow up intercountry projects sponsored by the Regional Office; to continue assistance to seminars and conferences conducted by the United Nations and other organizations whose work is of special interest to the Office; and to prepare and print reports on conferences, seminars and other meetings held by the Regional Office. (This project replaces activities under the former projects EURO CF 01, IC 01, RR 01, SC 01 and SC 02.)

PPE 002 (3104) Planning and evaluation of the long-term programme in environmental pollution control (1970-) R VD—To plan, coordinate and evaluate the long-term programme in environmental pollution control.

A consultation meeting took place in Copenhagen from 10 to 14 June 1974. There were 30 participants from 17 countries of the Region and 2 from the Region of the Americas, and representatives of ECE, WMO, the Commission of the European Communities, the International Association on Water Pollution Research, the International Organization for Standardization, and the International Solid Wastes and Public Cleansing Association. Provided—a consultant, the cost of attendance of 20 participants (temporary advisers) and the services of 18 staff members.

A working group on regional residuals—environmental quality management models—met in Rotterdam, Netherlands, from 22 to 25 October 1974. There were 24 participants, 7 observers and a representative of ECE. Provided—a consultant, the cost of attendance of 22 participants (temporary advisers) from 11 countries of the Region and the services of a staff member.

PPE 003 (3121) Environmental pollution information systems (1972-75) R—To obtain information on administration of and existing rules for pollution control and on control projects in the Region, and to design regional information systems.

CEP 004 and 206 (3110) Analytical methods in water pollution control (1971-) R VD—To survey and review the analytical methods and sampling procedures used in water pollution control, with a view to achieving agreement on common methods of sampling, analysis and expression of results; and to study the need for and promote the development of new methods.

A working group on automated monitoring and analysis met in Budapest from 11 to 14 February 1974 to examine one of the chapters of the manual on analysis for water pollution control. There were 15 participants from 12 countries of the Region and the United States of America, and 3 representatives of WMO, the Commission of the European Communities and the International

Intercountry Programmes (EURO) (*continued*)

Association on Water Pollution Research. Provided—the cost of attendance of the participants (temporary advisers) and the services of 2 staff members.

Another working group reviewed the chapter on physical and chemical examination of water at a meeting held in Prague from 21 to 24 May 1974. There were 18 participants and representatives of WMO, the Commission of the European Communities, the International Association on Water Pollution Research, and the *Association européenne océanique*. Provided—the cost of attendance of 12 participants (temporary advisers) from 9 countries of the Region and the United States of America, and the services of a staff member.

A third working group discussed design of measurement and sampling programmes and data processing at a meeting held in Koblenz, Federal Republic of Germany, from 1 to 4 October 1974. There were 21 participants from 14 countries of the Region, an observer, and representatives from WMO, the International Association on Water Pollution Research and the International Organization for Standardization. Provided—the cost of attendance of the participants (temporary advisers) and the services of 2 staff members.

CEP 010 and 304 (3114) Long-term effects on health of air pollution (1971–) VD—To promote clinical, physiological and epidemiological investigations on the long-term effects of air pollution on health, especially on the health of population groups at high risk.

A working group met in Düsseldorf, Federal Republic of Germany, from 17 to 19 April 1974 to analyse the results so far obtained in the study on chronic respiratory diseases in children in relation to air pollution, carried out in 5 countries of the Region, and to discuss the possible continuation of such studies. There were 21 participants, 2 observers, and 2 representatives of the Commission of the European Communities. Provided—the cost of attendance of the participants (temporary advisers) and the services of 5 staff members.

CEP 101 (3109) Health hazards and ecological effects of persistent substances in the environment (1971–) R VD—To study the route by which persistent substances discharged into the environment can find their way back to man and investigate and evaluate their ecological effects and the health hazard they represent; to recommend guidelines for the establishment of acceptable concentrations of various persistent substances in the ecosystem; and to study the use of experimental ecosystems and mathematical models in predicting the behaviour of persistent substances in different ecosystems.

A working group met in Brussels from 3 to 7 December 1973 to discuss the problem of the increasing quantities of polychlorinated biphenyls in the environment and possible hazards to human health arising therefrom, and to revise and finalize chapters of a draft manual on the subject. There were 16 participants from 11 countries in 3 WHO regions and 6 observers. Provided—the cost of attendance of the participants (temporary advisers) and the services of staff members.

Another working group met in Moscow from 19 to 22 November 1974 to discuss methods for studying biological effects of pollutants. There were 12 participants from 11 countries of the Region, 6 observers, and representatives of the Commission of the European Communities and the Council for Mutual Economic Assistance. Provided—a consultant, the services of 4 staff members, and the cost of attendance of the participants (temporary advisers).

CEP 102 (3129) Protection of man and ecosystems from adverse effects of pollutants (1973–) VD—To study the systems of analysing and the methods of controlling residues of persistent

pesticides in food products; and to promote and participate in the establishment of a global early warning system for detecting ecological changes before they irreversibly affect any ecosystem of major importance.

CEP 103 (3128) Ecological aspects of water pollution in specific geographical areas: (1) Rhine and North Sea; (2) Danube, Black Sea and Mediterranean (1972–) R VD—To review present and planned programmes relating to the control of water pollution in different parts of the Region.

A planning meeting was held in Copenhagen on 15 and 16 February 1974 to discuss the pollution of the Rhine. Provided—2 temporary advisers and the services of 3 staff members.

The steering committee on the Oslo Fjord pilot project on studies of sublethal effects on marine organisms met in Göteborg on 29 and 30 August 1974. Provided—a consultant, and 11 temporary advisers from 3 countries of the Region. Three observers attended.

CEP 205 (3108 and 3125) Recreational water quality on beaches (1971–75) VD—To compile available knowledge on water quality requirements for bathing beaches, undertake further studies with a view to preparing manuals and codes of good practice for bathing water and beach sanitation, establish collaborative programmes on sampling and analysis of beach pollution, and promote epidemiological studies on the role of polluted beaches and water used for recreation in causing infection among tourists.

A working group met in Bilthoven, Netherlands, from 28 October to 1 November 1974 to discuss guides and criteria in this field and review draft chapters of the manual to be prepared. There were 20 participants from 10 countries of the Region and 2 in other WHO regions, and 3 representatives of the Commission of the European Communities. Provided—a consultant, the cost of attendance of 14 participants (temporary advisers) and the services of a staff member.

CEP 303 (3106) Health aspects of air quality management (1971–) VD—To review scientific and technological information on air quality control with specific reference to public health; and to prepare manuals and codes of good practice in air pollution control and study their application in pilot areas.

A working group on pollution by lead and other non-ferrous metallurgical industries met in Brussels from 2 to 4 July 1974. There were 25 participants. Provided—the cost of attendance of 6 participants (temporary advisers) and the services of a staff member.

CEP 402 (3404) Solid waste management in Europe (1973–) R—To make an assessment of the present situation and a forecast of trends in the management of solid wastes in Europe, including quantities and types of wastes and the methods of their handling, treatment and disposal.

CEP 803 (3170 and 3171) Protection of the public from non-ionizing radiation (1972–) R—To promote studies on the health effects of non-ionizing radiation with a view to recommending measures for the protection of the public; and to review existing laws and regulations on the subject with a view to making recommendations on their improvement and on the practicability of their enforcement.

A working group met in Dublin from 21 to 24 October 1974 to review the biological effects and health hazards from the use of lasers and the available and needed means for health protection; to make recommendations on related activities for consideration by the Regional Office; and to review a document on lasers draft-

ed for a manual on non-ionizing radiation protection. There were 25 participants from 25 countries of the Region and participants from 3 countries in other WHO Regions, as well as a representative of the International Radiation Protection Association. Provided—the cost of attendance of 8 participants (temporary advisers) and part cost of attendance of 3 others, and the services of 2 staff members.

SES 001 (3001) Training for environmental health engineers (Russian language) (1966–) R—To assist the annual post-graduate course in sanitary engineering in Poland.

Planning for the sixth course, postponed to 1975, was discussed at a one-day meeting held in Copenhagen in November and attended by 2 temporary advisers and 2 staff members.

SES 002 (3002) Training for environmental health engineers (French language) (1967–) R—To assist in the development of an academic course for sanitary engineers and provide training for teaching staff.

A course was held at the Federal Polytechnic School, Lausanne (Switzerland) from 7 January to 20 December 1974. Provided—fellowships to 2 trainees from countries of the Region. (Three more fellowships were awarded under another project.)

SES 003 (3006) Manpower requirements in environmental health (1972–) R—To make a survey of manpower requirements in environmental health, covering the various categories of executive and operative personnel, as a basis for evaluating current training programmes and preparing new ones.

The steering committee that met in June 1973 held its second meeting in Copenhagen from 2-6 September 1974 to review the information collected and make proposals for future work. Provided—5 temporary advisers from 5 countries of the Region and the services of 4 staff members.

SES 004 (3007) Postgraduate training in environmental sciences (1973–) R—To assist postgraduate training courses in environmental sciences for engineers, chemists, biologists, public health medical staff and others.

SES 005 (3010) Training programmes in environmental health (1974-76) R—To evaluate the adequacy of current programmes for training environmental health personnel in the light of the results of the survey on manpower requirements in environmental health (intercountry project SES 003 (3006)) and, where necessary, propose new programmes better adapted to requirements.

SES 006 (3101) Courses in environmental pollution control (1974–) R—To assist short courses in environmental pollution control with special reference to public health.

SES 009 (3127) Role of public health services in environmental pollution control (1973-75) R—To study the present role of the public health services in environmental pollution control and discuss ways of assisting them to cope with the problems arising from urbanization and industrialization and the appearance of new pollutants.

FSP 001 (3602) Postgraduate course in food microbiology and hygiene, Zeist, Netherlands (13-20 Aug. 1974) VD—Fellowships were awarded to 3 trainees from 3 countries of the Region.

FSP 002 (3604) Study on the control of harmful residues in food for human and animal consumption (1972–) VD—To study

the methods used in the Region for the control of harmful residues (including antibiotics, hormones, pesticides and conserving chemicals) in food; and to prepare proposals for drawing up and periodically reviewing public health guides and criteria for the control of such residues.

PPH 001 (PS 06) Programme supporting services (health statistics) (1974–) R—To meet requests from countries for advice on subjects for which no regional officer is available and for organizing national activities to follow up intercountry projects sponsored by the Regional Office; to continue assistance to seminars and conferences conducted by the United Nations and other organizations whose work is of special interest to the Office; and to prepare and print reports on conferences, seminars and other meetings held by the Regional Office. (This project replaces activities under the former projects EURO CF 01, IC 01, RR 01, SC 01, and SC 02.)

PPH 002 (4901) Health statistical services (1962–) R—To sponsor and coordinate studies on health statistical methodology and on the organization and functions of health statistical services. Under this project work will continue, in cooperation with ECE, on the integration of health statistics and social and economic statistics.

3132 Water quality management of the Danube (1973–) R UNEP—To finalize a WHO programme for monitoring water quality parameters of public health importance, as part of WHO's environmental monitoring activities and as an input to the United Nations environmental monitoring system; and to develop a project that will serve as a basis for water pollution control in the Danube River basin.

During the period under review 2 consultants visited most of the riparian countries, as well as the Danube Commission and the Council for Mutual Economic Assistance, to explain the proposed programme of water quality monitoring and obtain their views. A report on the consultants' findings will be made available to a working group to be convened in 1975 to discuss the further development of the programme.

4411 Liaison meeting of intercountry associations concerned with nursing and midwifery in Europe, Copenhagen (26-28 June 1974) R—To review major problems confronting the profession and the principal constraints hindering their solution. There were 8 representatives of the International Committee of Catholic Nurses, the International Council of Nurses, the International Confederation of Midwives, the League of Red Cross Societies, the Northern Nurses' Federation and the Western European Nursing Group. Provided—a consultant, the services of 7 staff members, and the cost of attendance of a participant from Hungary.

5604 Nutrition advisory services for Mediterranean countries (1973-74) UNFPA—To follow up previous activities in nutrition, and particularly to link nutrition with family health and family planning activities in countries where UNFPA-financed projects are in operation or planned. A consultant visited Turkey from 25 November to 19 December 1973, and another visited Algeria from 2 to 29 April 1974, to advise on nutrition work in the framework of family health programmes.

5703 Studies on patterns of road accidents (1974) R VD — To investigate the extent to which public health authorities provide, distribute and evaluate information on road accidents; to study aspects of driving behaviour, general injury patterns, and trends in certain groups (children, the elderly, and drivers in different age groups). The studies will be coordinated with those made by other intergovernmental agencies.

Intercountry Programmes (EURO) (continued)

A meeting was held in Copenhagen on 22 and 23 January 1974 to discuss the studies and draft a reporting form for collecting the information needed. Provided—4 temporary advisers and the services of 3 staff members.

7408 Third European Symposium on Clinical Pharmacological Evaluation in Drug Control, Heidelberg, Federal Republic of Germany (5-8 Nov. 1974) FT—To discuss problems in operating

drug regulatory agencies and possible solutions to them, the responsibilities of health authorities for dissemination of information on drugs, and a practical approach to the activities of a centre for clinical pharmacology. There were 36 participants from 24 countries of the Region and representatives of the Council of Europe, the Benelux Economic Union, the International Federation of Pharmaceutical Manufacturers Associations, and the International Union of Pharmacology. Provided—7 temporary advisers, the services of 4 staff members, and the cost of attendance of 23 participants.

EASTERN MEDITERRANEAN REGION

Afghanistan

SHS 001 (4001) Development of basic health services (1965-77) R UNICEF—To establish, throughout the country, basic health services into which the malaria eradication services may be integrated in areas where the consolidation phase of the antimalaria programme is well advanced; and to strengthen the provincial health administration so as to secure adequate supervision of the basic health services personnel.

SHS 002 (4701) School of radiography (1969-77) R—To strengthen the development of the school and train personnel.

MCH 001 (5101) Maternal and child health (1972-75) UNDP—To reorganize and strengthen comprehensive services for maternal and child health care, including family planning, and to provide refresher and orientation courses in maternal and child health for professional and auxiliary health personnel.

HMD 001 (4401) Nursing advisory services (1957-76) UNDP—To strengthen nursing administration at national and local levels, and develop and coordinate nursing and midwifery education and services.

HMD 002 (4402) Nursing administration and education (1967-) R—To improve nursing services administration in order to provide effective nursing care of patients.

HMD 003 (6201) Medical education (1952-77) R—To develop medical education, with particular attention to improving the teaching of the basic medical sciences and community medicine and to the further training of teachers in their subjects and in educational science and methodology.

HMD 004 (6301) Postgraduate education in public health (1974-) R—To develop postgraduate teaching at the School of Public Health, Kabul.

HMD 099 (6041) Health manpower development : fellowships R

ESD 001 (4202) Institute of Public Health, Kabul (1956-58; 1961-) R—To develop the Institute for service, research and training in the epidemiology, surveillance and control of communicable diseases, and in nutrition and health education.

MPD 001 (2001) Malaria eradication programme (1956-) R UNDP UNICEF—To eradicate malaria from Afghanistan north of the Hindu Kush, and to continue antimalaria "holding" operations to conserve the gains achieved south of this mountain range, with the ultimate objective of achieving the eradication of malaria from the whole country.

SME 001 (1801) Smallpox eradication (1967-76) R—To keep the country free from smallpox by vaccination of the most vulnerable population groups and the operation of a reporting and surveillance/containment system.

MBD 001 (1201) National tuberculosis programme (1958; 1961-76) UNDP UNICEF—To implement a national tuberculosis control programme integrated into the basic health services.

SQP 001 (7401) Pharmaceutical quality control (1972-77) R—To establish a division of pharmacy and medical supplies in the Ministry of Public Health; and to develop the quality control laboratory for the analysis and assay of pharmaceutical preparations and administrative control measures such as legislation, licensing and registration of locally manufactured and imported drugs.

LAB 001 (4201) Histopathology Department, Avicenna Hospital (1972-73) R—Supplies and equipment were provided to aid the development of the Histopathology Department of the Avicenna Hospital, Kabul, which trains students and conducts routine epidemiological work.

A central Histopathology Institute has now been established in Kabul with help from WHO, and it is proposed to assist its further development in 1976 and 1977.

BSM 001 (3001) Environmental health (1966-) R—To develop the environmental sanitation unit in the Ministry of Public Health and plan and implement a long-term programme of community water supply, waste disposal and general sanitation.

PIP 001 (3201) Water supply, sewerage and drainage for Greater Kabul (1966; 1968-69; 1971-74) UNDP—To make a detailed study of the water supply, sewerage and drainage situation in Greater Kabul and formulate a master plan and a phased programme of development. Provided—a sanitary engineer (project manager) (1971-74), consultants, contractual services, 9 fellowships, and supplies and equipment.

The technical activities of the project, including the collation of data, field surveys and engineering and management studies, leading to the preparation of the master plan, were entrusted to a subcontractor. An amendment to the agreement extended the scope of the subcontractor's undertaking to include the final design of a water supply system for the Khair Khana area. The necessary design drawings, specifications and tender documents were submitted. The project was reviewed by a WHO project guidance mission in November 1972 and by a joint WHO/UNDP mid-project review mission in August and September 1973.

In addition to the final report, the subcontractor submitted 5 interim reports dealing with: the joint master plan; organization, management, financial and legal aspects; solid wastes; immediate measures—water; and immediate measures—sewerage, the last 2 being supplementary to the final report. A draft agency terminal report was prepared.

As a result of the pre-investment studies, opportunities for financing the first-stage water supply and sewerage works for Kabul city are available from IBRD and/or bilateral sources. The national counterpart engineers have received inservice training or fellowships for study abroad.

DHS 001 (4901) Advisory services on vital and health statistics (1971-) R—To develop the national vital and health statistical services and train the necessary staff.

Afghanistan (continued)

DHS 002 (4902) Infant and childhood mortality survey (1971–) UNFPA—To organize a survey on infant and childhood mortality that will provide information on the magnitude of the problem, the factors affecting it, and the impact of specific public health measures; to test statistical methods for collecting information on infant and childhood mortality in the absence of or as a supplement to a vital statistics system; and to train staff for the project.

Bahrain

HMD 003 (6042) Health and medical fellowships UNDP

HMD 099 (6041) Health manpower development : fellowships R

PIP 001 (3301) Bahrain sewerage (1973–75) UNDP—To make a pre-investment survey for sewerage and drainage for the metropolitan areas of Bahrain, and to formulate a master plan and a phased programme for development.

Cyprus

HMD 099 (6041) Health manpower development : fellowships R

SQP 001 (7401) Pharmaceutical quality control (1967–69; 1971–72; 1974–) R—To develop the laboratory for the quality control of pharmaceutical preparations, and to provide the national pharmaceutical services with an efficient control system.

LAB 001 (4201) Public health laboratory (1970–77) R VC VS—To establish a cancer register and raise the standard of performance of the histopathology department.

Democratic Yemen

SHS 001 (4001) Public health advisory services (1968–) R VA—To strengthen the administration of the health services and develop health programmes.

HMD 001 (6101) Institute of Health Manpower Development, Aden (1970–78) UNDP—To establish an institute for training the technical personnel (nursing staff and middle-grade personnel of various categories) required for the health services.

HMD 099 (6041) Health manpower development : fellowships R

MPD 001 (2001) Malaria control (1969–) R—To carry out antimalaria measures and coordinate the development of the malaria service with that of the rural health services.

SME 001 (1801) Smallpox eradication (1969–) R VS—To carry out mass vaccination against smallpox and to organize and intensify reporting and surveillance, in order to keep the country free from smallpox.

MBD 001 (1201) Tuberculosis control (1971–) R UNICEF—To implement a comprehensive national tuberculosis control programme, integrated into the general health services in the provinces and with a specialized service at the central level.

LAB 001 (4201) National health laboratory (1971–77) R—To establish a central public health laboratory that will serve as a nucleus for the development of national health laboratories.

DHS 001 (4901) Advisory services on vital and health statistics (1974–) R—To develop a national vital and health statistics service and train staff.

4501 Health education advisory services (Dec. 1973–Jan. 1974) R—A consultant assisted the Government in developing health education services and in training personnel at the Institute of Health Manpower Development, Aden.

Egypt

SHS 002 (4302) Medical emergency centres (1970; 1973–77) R—To establish centres to deal with accidents and medical emergencies in Cairo and Alexandria.

SHS 003 (8401) Neurosurgical centre, Shoubra Hospital, Cairo (1971–73) UNDP—To establish a new neurosurgical centre in Shoubra Hospital, Cairo, and develop secondary neurosurgical centres in other governorates. Provided—equipment and fellowships (total of 50 months) in neuroradiology, electroencephalography and neurosurgery.

SHS 004 (8801) Centre for allergic diseases of the respiratory system (1971–74) UNDP—Two fellowships (total of 9 months) and supplies and equipment were provided to assist the establishment of a centre for the study and treatment of allergic diseases of the respiratory system.

MCH 001 (5101) Prophylaxis of recurrence of rheumatic fever in schoolchildren (1972–) R—To prevent and control rheumatic fever in schoolchildren.

MCH 002 (9601) Family planning (1970–) UNFPA—To implement the health component of the national family planning programme and train technical personnel for the programme.

HMD 002 (4402) High Institute of Nursing, Cairo University (1965–75) R—To develop a basic 4-year degree programme in nursing, designed to prepare nurses for leading posts in nursing service and educational programmes.

HMD 003 (6001) Centre for educational technology in the health sciences (1973–77) R—To develop a centre for the application of modern educational technologies in order to increase the number and raise the standard of health personnel in Egypt and prepare teaching/learning material of high quality that can be used in health manpower training programmes in other countries.

HMD 004 (6201) Medical education (1970–77) R—To develop undergraduate and postgraduate medical education, and scientific research, in the medical schools.

HMD 005 (6401) High Institute of Public Health, University of Alexandria (1956–77) R—To develop the Institute, which provides postgraduate training in public health for Egyptian graduates and WHO fellows from other countries of the Region.

HMD 099 (6041) Health manpower development : fellowships R

MPD 001 (2001) Malaria eradication programme (1957–) R—To carry out studies on malaria in the country, with particular emphasis on the bionomics of the vectors and their susceptibility to insecticides, and to make studies of spraying equipment.

MPD 002 (2101) Schistosomiasis control pilot project and training centre (1961–73) R UNDP UNICEF—To design and test control measures to determine the most effective and economical means of controlling schistosomiasis in the country. Provided—the services of full-time staff (epidemiologists, malacologists and sanitary engineers); later, as operations were

gradually taken over by national personnel, consultants who made periodic reviews of the project. Equipment and supplies, including chemicals and drugs, were also provided.

In 1965 the project became a field demonstration and training centre for the Region, as well as a centre for applied research. An evaluation was started in 1968, and continued through 1969 and 1970, after which a new mollusciciding scheme was put into operation. The evaluation having provided no evidence that mollusciciding alone, as carried out between 1963 and 1969, could control schistosomiasis, a combined scheme of mollusciciding and treatment of patients was put into effect as from 1973.

MBD 001 (1201) BCG vaccine production, Cairo (1972-74) UNDP—To establish a laboratory for the large-scale production of freeze-dried BCG vaccine.

VIR 001 (1901) Virus research, training and production centre, Agouza (1966-) UNDP—To set up a vaccine production centre for poliomyelitis, measles and other virus vaccines.

CVD 001 (4301) Intensive care unit, Alexandria University Hospital (1970-) R—To develop an intensive care unit at the Hospital.

CVD 002 (4303) Intensive care units, Cairo (1972-77) R—To plan, organize and manage intensive care units in the large hospitals and train the necessary staff.

SQP 001 (4202) Development of a national control laboratory for biological substances (1974-) UNDP—To develop a national control laboratory that will ensure a sufficient quantity of biological substances produced in Egypt and improve their quality, and also control imported biological substances.

SQP 002 (7401) Pharmaceutical quality control (1970-77) R—To develop specific aspects of drug control for locally manufactured and imported pharmaceutical preparations, and to carry out research and train specialists in this field.

ISB 001 (4201) Concentrated sera production (1972-76) R—To establish a unit for the production and purification of concentrated sera at the Agouza laboratories, Cairo.

LAB 001 (1601) Shigella and Salmonella survey (1969-) R—To establish a national reference centre for the identification of *Shigella* and *Salmonella*.

DHS 001 (4901) Health data processing (1970-) R—To improve the use made of computers for vital and health statistics and research, and to train national staff.

Ethiopia

SHS 002 (4101) Health planning (1968-) UNDP—To plan and develop national health services and coordinate health programmes as part of the national 5-year development programme.

SHS 003 (4301) Hospital planning and administration (1970; 1972-) R—To develop the hospital and medical care services.

SHS 004 (4302) Maintenance and repair of medical equipment (1974-) R—To establish a central service for the maintenance and repair of medical equipment.

SHS 005 (4303) Medical emergency services (1974-) R—To plan and organize an emergency centre in Addis Ababa to deal with accidents, medical emergencies etc., that may be used as a model for the development of similar services throughout the country.

SHS 007 (4304) Public health assistance in drought relief (1974-76) UNDP

HMD 001 (6201) Medical education (1964-77) R—To develop medical education at the University in Addis Ababa, with special attention to the improvement of teaching in the basic medical sciences and in community medicine, and to providing further training to teachers in their subjects and in educational science and methodology.

HMD 099 (6041) Health manpower development : fellowships R

ESD 001 (1001) Advisory services in epidemiology (1966-) UNDP—To plan, develop and operate epidemiological services at all levels of the health services.

MPD 001 (2001) Malaria eradication training centre (1959-75) R—To train various categories of personnel for the malaria eradication programme.

MPD 002 (2002) Malaria eradication programme (1967-) R (USAID)—To eradicate malaria from those areas in which technical and administrative conditions ensure its feasibility.

SME 001 (1801) Smallpox eradication (1968-77) R VS—To achieve the eradication of smallpox through a system of reporting and surveillance/containment operated with the cooperation of the health services.

MBD 001 (1201) Tuberculosis control (1959-) UNDP UNICEF—To implement a comprehensive national tuberculosis control programme, integrated into the provincial health services.

SQP 001 (7401) Pharmaceutical services (1971-77) R—To establish a division of pharmacy and medical supplies in the Ministry of Public Health; and to develop the quality control laboratory for the analysis and assay of pharmaceutical preparations and administrative control measures such as legislation, licensing and registration of locally manufactured and imported drugs.

LAB 001 (4201) National health laboratory service (1972-) UNDP—To establish a national health laboratory service by strengthening and modernizing the Central Laboratory and Research Institute and expanding the services to cover the provinces; and to train the necessary personnel.

BSM 001 (3002) Public and environmental health control, Awash valley (1971-76) UNDP—To review the epidemiological situation and assess the health and environmental hazards in the area covered by the Awash valley development programme, to plan a network of basic health services and to improve sanitary facilities, especially as regards community water supplies, disposal of domestic and industrial wastes and control of schistosomiasis.

BSM 002 (3201) Community water supply (1967-) UNDP—To plan, design, and supervise the construction of community water supplies in the small towns.

SES 001 (3001) Environmental health services (1967-) R—To plan and administer a national environmental health programme.

Ethiopia (continued)

DHS 001 (4901) Health statistics (1966-73) UNDP UNICEF—To strengthen the health statistical unit in the Ministry of Public Health, improve the collection and publication of vital and health statistical data, and train statistical personnel of various categories at the central and provincial levels. Provided—a health statistician for some 80 months, a fellowship, and supplies.

The project started in July 1963 as a joint project "Advisory services in epidemiology and health statistics" (Ethiopia 0003). It was later divided into 2 components, one of which became the health statistics project.

The central health statistical unit was upgraded to a Statistics Division, headed by a university-qualified statistician, staffed in addition by a statistical technician, 6 statistical clerks and a secretary, and equipped with calculating and typing machines. The first group of trained statistical clerks (who had completed the one-year course at the University in Addis Ababa) was assigned in July 1973, one to each of the provincial health departments. UNICEF supplied an electronic calculator and a land-rover to the Statistics Division, and an electronic calculator to each provincial health department.

Hospital morbidity statistics are now based on returns from 86 hospitals reporting about 120 000 discharges (as against 51 hospitals reporting some 63 000 discharges 3 years earlier). The first report on hospital morbidity statistics, for the year 1968/69, was published in 1971, and the second, for 1969/70, in 1972.

Data on outpatient morbidity, covering the period September 1969-September 1971, was first published towards the end of 1973. The total number of outpatient visits in 1970/71 was 2.64 million, but only 1.08 million diagnoses were reported.

Data on physical, health and manpower resources have been published since 1969. Forms for reporting on inpatient and outpatient morbidity and for notification of infectious diseases have been revised. Standard forms (family folder, individual health record, and identity card for outpatients) were introduced in the health centres.

Assistance was also given to other WHO-assisted projects and divisions of the Ministry of Public Health, and to several institutions in connexion with training in vital and health statistics.

Iran

SHS 001 (4801) Rehabilitation of the physically handicapped (1969-77) R—To train personnel required for the development of rehabilitation services throughout the country at the school of physical therapy, University of Teheran, and the Shafa Yahayaian Rehabilitation Hospital.

SHS 003 (4001) Health services development (1973-) R UNDP—First phase: to provide an analytical description of the health and health services situation in West Azerbaijan that would enable an appraisal to be made of means of developing health services in order further to improve community health.

MCH 001 (9601) Health aspects of family planning (1971-) UNFPA—To plan and implement the health components of the national family planning programme, and to train technical personnel for the programme.

HMD 001 (4401) High Institute of Nursing, Teheran (1967-76) UNDP—To develop basic nursing education at university level.

HMD 002 (4402) Postbasic nursing education (1967-) R—To develop a 2-year postbasic programme leading to a degree of Bachelor of Science in nursing at the Department of Nursing, College of Arts and Sciences, Pahlavi University, Shiraz.

HMD 003 (6201) Medical education (1971-77) R—To develop medical education, with particular attention to improving the teaching of the basic medical sciences and community medicine and to the further training of teachers in their subjects and in educational science and methodology.

HMD 004 (6401) Postgraduate education in public health (1964-77) R—To develop the School of Public Health of the University of Teheran, giving particular attention to the further training of teachers in the various disciplines and to the improvement of the teaching of radiation health.

HMD 099 (6041) Health manpower development : fellowships R

MBD 001 (1201) Production of BCG vaccine, Pasteur Institute, Teheran (Oct.-Nov. 1974) R—A consultant advised the Government on the improvement of freeze-dried BCG vaccine production and helped to train the national staff required.

VBC 001 (3701) Rodent control (Feb.-March 1974) R—A consultant advised on equipping the port of Khorramshahr for the issue of Deratting Certificates and Deratting Exemption Certificates and submitted recommendations concerning the designation of Abadan and Bandar Shapur for the issue of Deratting Exemption Certificates.

CAN 001 (8101) Cancer control (1967-77) R—To develop the programme of the Research Department of the Teheran Cancer Institute.

MNH 001 (5401) Mental health services (1974) R—A consultant advised on a rehabilitation programme for narcotic-dependent persons.

SQP 001 (7401) Laboratory for pharmaceutical quality control (1966-77) R UNDP—To develop the quality control laboratory for the analysis and assay of pharmaceutical preparations, chemicals and dependence-producing drugs, revise legislation governing the trade, and train local staff in modern techniques of drug analysis.

PIP 001 (3301) Pre-investment survey of sewerage needs and facilities in Teheran (1968; 1970-74) UNDP—To undertake a pre-investment survey for sewerage and storm drainage in the Greater Teheran area and draw up master plans and first-stage feasibility studies to assist in securing investment for construction. The survey also covered the treatment and reuse of water for agricultural purposes. Provided—a project manager (to Aug. 1974), a panel of 3 consultants for 3 periods of 1 week (Aug. and Nov. 1973, May 1974), and the services of a subcontractor.

The subcontractor, who terminated his work in October 1974, prepared a draft management report and a study for the Teheran slaughterhouse; these, together with the preliminary report, were discussed with the WHO consultants. The report on the Teheran slaughterhouse treatment facilities was forwarded to the Government in March 1974.

A review mission in November 1973 assessed the findings on reuse of treated waste water for agricultural, industrial or municipal purposes and also reviewed the proposed alternative schemes for waste water and storm water master plans, including the first-stage construction programmes.

During the last visit of the consultants in May 1974, the project activities, including all draft reports, were reviewed. Amendments proposed appeared in the final documents presented by the subcontractor. Representatives of IBRD attended most of the meetings in order to advise on financing the engineering works.

CEP 001 (3101) Air pollution control (1974-) R—To study sources of air pollution in the main industrial cities, devise measures for their control, train staff in the techniques of pollution measurement and control, and prepare standards and regulations.

HWP 001 (5201) Occupational health (1963-64; 1972-77) R—To develop teaching and research in the School of Public Health, University of Teheran, and carry out a field survey for assessment and control of the working environment in a selected sample of Iranian industry.

SES 001 (3001) Teaching of sanitary engineering, Pahlavi University, Shiraz (1968; 1970; 1972-) R—To develop a programme of sanitary engineering education and research, initially at undergraduate level, at the University.

Iraq

SHS 001 (4001) Comprehensive basic health services: training (1964-) UNDP UNICEF—To provide inservice training for professional and auxiliary personnel of the rural health services and field training to undergraduate medical and nursing personnel.

SHS 002 (4301) Hospital services administration (1966-77) R—To strengthen the administration of the Medical City Teaching Hospital, Baghdad, plan and organize nursing services, establish an intensive care unit and a central sterile supply department, and develop food and dietetics services.

SHS 003 (4302) Maintenance and repair of medical equipment (1973-) R—To establish a central service for the maintenance and repair of medical equipment.

SHS 004 (7401) Poison information centre (1972; 1974-) R—To establish a poison information centre, formulate procedures for dealing with poison cases whenever they occur, and ensure timely treatment.

MCH 001 (9601) Maternal and child health and family health (1970-74) UNFPA—To develop and expand integrated maternal and child health/family planning services through the maternal and child health centres, as part of the health services, with emphasis on the maternity-centred approach; and to train personnel. Provided—a medical officer (Sept. 1971–April 1974) and 2 nurse/midwives (Aug. 1972–April 1974 and Jan.-May 1974), a consultant (Dec. 1972) 4 long-term and 21 short-term fellowships, and supplies and equipment.

A plan in 4 phases was worked out, but on completion of the second phase the project was terminated at the Government's request. All the planned targets of the first two phases were reached within the specified time. During the operation of the project a national demonstration and training centre was established at Karkh Maternity Hospital, Baghdad, and in nearby health centres. Two family health centres were established in Baghdad and one in Mosul. Numerous training activities were undertaken for doctors, nurses, health visitors and social workers. Information was disseminated through individual and group guidance and articles published in the Iraqi Medical Journal. Four research activities were completed, a second KAP (knowledge, attitudes and practice) study for mothers in Baghdad was started, and a protocol was prepared for a study on the impact of fertility factors on child health.

HMD 001 (4401) College of Nursing, Baghdad (1962-) R—To develop a university nursing education programme to prepare nurses for leading posts in nursing service administration and in nursing education.

HMD 002 (6201) Medical education (1971-77) R—To develop medical education, with particular attention to improving the teaching of the basic medical sciences and community medicine and to the further training of teachers in their subjects and in educational science and methodology.

HMD 099 (6041) Health manpower development: fellowships R

MPD 001 (2001) Malaria eradication programme (1957-) R—An extension of the malaria control programme with which WHO has assisted since 1952.

VBC 001 (3701) Rodent control (1974-75) R—To make a survey of rodent control in Baghdad and organize a rodent control programme.

CAN 001 (8101) Cancer control (1968-77) R—To develop the radiotherapy department of the Institute of Radiation and Nuclear Medicine, Baghdad, and to train radiotherapy technicians.

RAD 001 (4701) Radiation protection (March-June 1974) R—A consultant assisted in organizing radiation protection measures in various institutions.

LAB 001 (4201) Public health laboratory services (1969-) R UNDP—To develop microbiological diagnostic facilities adequate for the needs of the curative and preventive health services and also to develop the production of vaccines.

PIP 001 (3201) Rural water supply programme, phase I (1971-74) UNDP—To appraise the community water supply system in the rural areas, prepare a master plan for rural water supplies, and establish a national water authority. Provided—a project manager (June 1971–April 1974) consultants (1972 and 1973), contractual services, 9 fellowships and supplies and equipment.

A consulting engineering firm, as subcontractor, undertook various technical activities including a survey of the rural areas, and engineering studies leading to the preparation of a master plan for the countrywide rural water supply programme, and made recommendations on the establishment of a rural water authority. Three interim reports were submitted, in addition to the final report.

The project was reviewed by a project guidance mission of 2 consultants in January-February and June-July 1973, and by the UNDP/WHO joint mid-project review mission in June 1973. A WHO engineering consultant visited the project in May 1973, and the subcontractor's home office in October-November 1973 to provide guidance regarding the subcontractor's reports.

In spite of certain delays and difficulties, the project achieved its objectives: a workable rural water supply master plan was produced, suitable recommendations were made for a rural water supply organization, and counterpart staff were prepared through fellowships for study abroad and inservice training.

PIP 002 (3202) Rural water supply programme, phase II (1974-76) UNDP—To carry out preliminary engineering and feasibility studies on the first-phase programme in the master plan and prepare a design manual. Under this project assistance will be provided also with respect to construction planning, further groundwater studies, strengthening of the rural water supply department, water quality control, and other aspects of the rural water supply programme.

Iraq (continued)

CEP 001 (3101) Air pollution control (Nov.-Dec. 1974) R—A consultant studied the air pollution situation in Baghdad and other cities and recommended measures for abatement, particularly at the sources of pollution. He also helped to train staff in the techniques of pollution measurement and control.

Israel

HMD 001 (4401) Nursing education (1965–) R—To develop and strengthen nursing education and services.

HMD 002 (6201) Medical education (1957–77) R—To develop medical education, with particular attention to improving the teaching of the basic medical sciences, community medicine, nutrition and mental health and to the further training of teachers in their subjects and in educational science and methodology.

HMD 099 (6041) Health manpower development : fellowships R

CAN 001 (8101) Cancer control (cytopathology) (1972–74) R—To improve the teaching of clinical cytology and train personnel in this field, two courses, one for technicians, and one for doctors involved in clinical cytology, were held from October 1972 to March 1973. They were attended by 13 technicians and 3 doctors. In addition, a two-week course on special cytopathology, held in November 1972, was attended by 4 technicians and 11 doctors, and some of the sections had a much larger attendance. Provided—4 consultants (lecturers) and some equipment.

RAD 001 (4701) Radiation protection (1970–77) R—To improve dosimetry in therapeutic X-ray installations and increase the protection of personnel occupationally exposed to ionizing radiation by introducing thermoluminescent dosimeters; to train hospital physicists; and to carry out surveys of environmental radioactivity in the Central Laboratory for Prevention of Air Pollution and Radiation Hazards, Tel Hashomer Government Hospital.

BSM 001 (5501) Fluoridation of water (April-May 1974) R—A consultant in dental health organized a baseline study of dental caries and designed the data collection and processing for it. He also advised on problems that might arise in fluoridating water supplies in small communities and in fluoridation in certain parts of the country with a hot climate and where water consumption is very high.

CEP 001 (3101) Air pollution control (1965–71; 1973–) R—To improve air pollution control legislation.

CEP 002 (3102) Quality of the environment (1974–75) UNDP—To survey air pollution problems, plan studies and measures for abatement and control, and train personnel.

Jordan

SHS 001 (4301) Hospital planning and administration (1971–74) R UNDP—To organize and develop a hospital administration unit in the Ministry of Health, and review the planning of facilities and the organization and management of hospitals. Provided—a consultant in hospital architecture (July-Sept. 1971) and a hospital administrator (Aug. 1973–June 1974), and fellowships.

An assessment was made of the organization and functions of the Ministry of Health with respect to hospital administration at different levels of health services, and assistance was provided in strengthening hospital administration at the local level.

SHS 002 (4801) Rehabilitation services (1967–77) R—To develop the rehabilitation centre and introduce modern methods of physical therapy; also to plan and develop training programmes for physical therapists and establish a prosthetic workshop.

HMD 001 (4401) Nursing education (1965–77) R UNDP—To strengthen nursing services and develop professional and auxiliary nursing education programmes.

HMD 002 (6101) Health training institute (1966–70; 1972–) R—To establish and develop an institute for training multipurpose health personnel for staffing health centres and dispensaries in rural areas.

HMD 003 (6201) Medical education (1972–77) R—To strengthen the Faculty of Medicine and Pharmacy of the University of Amman, particularly as regards the teaching of community medicine and the further training of teachers in their subjects and in educational science and methodology.

HMD 099 (6041) Health manpower development : fellowships R

MPD 001 (2001) Malaria eradication programme (1958–) R UNDP

MBD 001 (1201) Tuberculosis control (1963–) R—To formulate and implement a comprehensive national tuberculosis control programme, integrated in the general health services.

DNH 001 (5501) Dental health (1972–) R—To develop and improve dental services, with particular attention to the prevention of dental diseases.

LAB 001 (4201) Public health laboratory (1971–) R—To set up an oncology register in the public health laboratory services, develop the production of bacterial vaccines and establish a virology diagnostic section.

BSM 001 (3301) Municipal wastes disposal, Amman (1968–74) UNDP—A sanitary engineer (1968–1970) assisted the Municipality of Amman in connexion with the operation and maintenance of the new sewerage works and the provision of house connexions to the water mains and sewers, and also assisted in developing the water and sewerage unit in the Ministry of Municipal and Rural Affairs. In 1973 a consultant studied the municipal engineering problems in Amman and sanitary conditions in uncontrolled settlement areas, and submitted recommendations. Supplies and equipment were also provided and 2 fellowships awarded.

BSM 002 (3302) Sanitary engineering (1974–75) UNDP—To plan sewerage systems for the main towns and cities and train sanitary engineering personnel.

CEP 001 (3101) Air pollution control (Dec. 1973) R—A consultant made a survey of dust emission from the cement plant at El-Fuheis and made recommendations concerning measures to solve the problems identified. He also made recommendations for pollution control in 2 phosphate rock processing plants and 2 battery factories.

Kuwait

SHS 001 (4301) Hospital administration (Dec. 1973–March 1974) R—A consultant was provided for 2 months to assist in the planning, organization and management of hospital services and in improving the hospital referral system. He reviewed the hospital administration system, the ambulatory health services, and health centres, and made recommendations for improving their management and operation.

HMD 001 (4401) Nursing advisory services (1966-67; 1969-77) R—To develop nursing education and nursing services, define standards of nursing care, and organize inservice education programmes for nursing personnel.

HMD 099 (6041) Health manpower development : fellowships R

ESD 001 (2901) Epidemiological services (1974-77) R—To plan, develop and operate epidemiological services at all levels of the health services, giving particular attention to surveillance activities.

Lebanon

SHS 002 (4801) Rehabilitation of the physically handicapped (1963-77) R—To establish a physical therapy department in the government hospital, Beirut, and reorganize an orthopaedic workshop in a new prison on the outskirts of the city.

HED 001 (4501) Health education (1974) R—A cine projector and films, a slide projector, a generator and other equipment were provided to the health education section of the Ministry of Public Health.

HMD 099 (6041) Health manpower development : fellowships R

ESD 001 (1001) Advisory services in epidemiology (1974-) R—To set up a department of epidemiology for the control of the most prevalent communicable and noncommunicable diseases.

MBD 001 (1201) Tuberculosis control (1974-) R—To strengthen the tuberculosis control services.

SQP 001 (7401) Pharmaceutical services (1967-77) R—To develop the pharmaceutical services.

LAB 001 (4201) Public health laboratory (1957-67; 1973-) R—To establish a virology section in the central public health laboratory.

LAB 002 (4301) Blood bank (1963; 1965-66; 1970-) R—To develop the blood bank.

PIP 001 (3301) National waste management plan (1973-) UNDP—To carry out a pre-investment survey for sewerage and solid waste disposal covering the whole country, and to draw up master plans and first-stage feasibility studies to assist in securing investment for construction.

CEP 001 (3101) Air pollution control (April 1974) R—A consultant formulated recommendations concerning a study programme for determining the air pollution potential in Beirut and estimated the manpower requirements for carrying it out.

Libyan Arab Republic

HMD 001 (4402) Nursing education, Benghazi (1967-) R—To develop the nursing school in Benghazi.

HMD 003 (6101) Ibn Sina Institute of Health (1955-) FT—To train health auxiliaries and sanitarians, radiographers, laboratory technicians and male nurses for hospital and health centres, particularly in rural areas.

HMD 004 (6201) Medical education (1972-77) FR—To develop medical education through a programme of assistance to the medical faculty of the University of Libya in which special attention will be given to teaching of the basic medical sciences and of community medicine and to the further training of teachers in their subjects and in educational science and methodology.

HMD 005 (6102) Health manpower development (1974-) R—To train health personnel in accordance with the needs of the health services.

HMD 099 (6041) Health manpower development : fellowships R

ESD 001 (1001) Epidemiological services (1971-77) R—To establish in the Ministry of Health a department of epidemiology with the functions of collecting, analysing and interpreting data on diseases of public health importance and applying modern techniques for their control or eradication.

MBD 001 (1201) Tuberculosis control (1963-76) FT—To implement a national tuberculosis control programme.

VIR 001 (1701) Communicable eye disease control (1969-) FT—To set up, within the public health infrastructure, services for maintaining the control of communicable eye diseases on a permanent basis.

CAN 001 (8101) Cancer control (1973-77) R—To improve the radiotherapy department at the Government Hospital, Tripoli, and to plan a cancer registry and a cancer control programme.

SQP 001 (7401) Pharmaceutical services (1973-77) R—To develop a quality control laboratory for the analysis and assay of pharmaceutical preparations, and to establish a department of pharmacy in the University of Tripoli.

LAB 001 (4201) Public health laboratory services (1972-) R—To establish a national health laboratory service, starting with a central public health laboratory in Tripoli.

SES 001 (3001) Environmental health services (1968-) FT—To develop a national environmental health programme and environmental health services, including water and sewerage laboratories in the Ministry of Health and in the 3 provinces.

Oman

HMD 099 (6041) Health manpower development : fellowships R

MBD 001 (1201) Tuberculosis control (1974-77) R—To plan and implement a tuberculosis control programme integrated into the general health services.

PIP 001 (3201) Rural water supply for selected communities (March 1974)—Two consultants, under the WHO/IBRD Co-operative Programme, carried out a water supply and sanitation sector study and identified various projects required within the sector. In view of the urgency of providing safe water supplies in rural areas, it is planned to start this project, with UNDP assistance, in 1975.

Pakistan

SHS 001 (4801) Occupational therapy workshop (1970-77) R—To reorganize the work of the occupational therapy unit of the Department of Physical Medicine and Rehabilitation, Jinnah Postgraduate Medical Centre, Karachi, and to improve the orthopaedic workshop.

Pakistan (continued)

MCH 001 (9601) Family planning (1970-) UNFPA—To plan and implement the health aspects of the national family planning programme and to train technical personnel for the programme.

NUT 001 (5601) Nutrition Institute, Islamabad (1967-) R UNICEF—To organize a Nutrition Institute at Islamabad and promote nutrition programmes and services.

HMD 001 (6201) Medical education (1973-77) R—To develop medical education through a programme of assistance to the 10 medical faculties, special attention being given to the development of the faculties' libraries and to the further training of teachers in their subjects and in educational planning and methodology.

HMD 002 (6402) Institute of Hygiene and Preventive Medicine, Lahore (1966-77) R—To develop postgraduate teaching in public health at the Institute.

HMD 004 (6403) Institute of Public Health Engineering Research, Lahore (1974-76) UNDP—To establish an Institute of Public Health Engineering Research for applied and academic research, training of public health engineering personnel at different levels, and provision of service to government agencies and private industries.

HMD 099 (6041) Health manpower development : fellowships R

MPD 001 (2001) Malaria eradication programme (1961-) R

SME 001 (1801) Smallpox eradication (1967-77) R VS—To carry out mass vaccination against smallpox, with concurrent assessment, and to intensify the reporting and surveillance/containment system.

MBD 001 (1201) Tuberculosis control (1962-) R UNICEF—To implement a national tuberculosis control programme integrated into the general health services.

SQP 001 (7401) Pharmaceutical quality control (1973-77) R—To establish a central laboratory for the quality control of locally manufactured and imported pharmaceutical preparations, and to train staff in modern techniques of drug testing and analysis.

LAB 001 (4201) National health laboratories, Islamabad (1964-) R—To establish national health laboratories in Islamabad, with a view to making them reference laboratories for the whole country.

BSM 001 (3201) Community water supply and rural sanitation (1964-) R—To formulate a national water supply and sanitation programme within the fifth 5-year plan, and to improve and develop community water supplies and rural sanitation in the provinces.

PIP 001 (3202) Peshawar water supply extension (1973-74) UNDP—To plan and design the extension of the Peshawar water supply system.

SES 001 (3001) Teaching of sanitary engineering, Lahore (1968-) R UNICEF—To strengthen the postgraduate sanitary engineering course at the University of Engineering and Technology, Lahore.

Qatar

HMD 001 (6101) Training of health personnel (1969-) R—To train auxiliary health personnel, including assistant sanitarians, assistant male nurses, laboratory assistants and others from Qatar and neighbouring countries for staffing health services and hospitals; also to develop inservice and refresher training of health personnel already in government employment.

HMD 099 (6041) Health manpower development : fellowships R

LAB 001 (4201) Central public health laboratory (1973-77) R—To organize and develop the public health laboratory services.

Saudi Arabia

SHS 001 (4001) Public health advisory services (1962-63; 1967-74) R—To improve the administration of the public health services and the formulation, coordination, evaluation and follow-up of health programmes. Provided—a public health adviser (April 1970–May 1974), a nurse educator (Nov. 1969–March 1971), a consultant on medical supplies (Sept. 1973–Feb. 1974), fellowships, and supplies and equipment.

Information was collected on the health situation, and assistance was provided in preparing the health programme and budget, as well as in assessing progress in the health field. A plan for a detailed study of health facilities and problems was prepared for the Eastern Province—plan that could be adapted for use by other provinces. A preliminary study was made of the organization and staffing of hospitals and of the health manpower available.

The nurse educator assisted in improving coordination between the hospitals and the nurse training programme, advised on the selection of clinical practice areas, and demonstrated teaching equipment.

The consultant made recommendations and prepared guidelines covering various aspects of medical supplies and store-keeping.

SHS 002 (4801) Rehabilitation services (1974-76) R—To establish a rehabilitation centre in Riyadh and physiotherapy departments in Jeddah and Hufuf.

HED 001 (4002) Centre for training and applied research in community development (1972-74) UNDP/UN—A public health adviser participated, with other staff of the centre, in organizing and planning training courses. A 9-month course in community development was attended by all categories of community development workers. A 2-month summer course was held for literacy and adult education teachers. Other short courses included one for social security researchers. A 3-month training course in health education, the first in Saudi Arabia, was attended by 21 sanitarians from the Ministry of Health and the municipalities.

HMD 099 (6041) Health manpower development : fellowships R

ESD 001 (1001) Epidemiological services (1973-77) R—To assist the work of the health services in connexion with the influx of pilgrims during the Haj pilgrimage, particularly as regards the planning of programmes for the prevention and control of communicable diseases.

MPD 001 (2001) Malaria pre-eradication programme (1963-) R—To build up the technical, administrative and operational facilities for a control programme as a step towards malaria eradication, and at the same time to develop the rural health services, so that they may provide efficient support to the control and eventual eradication operations.

SME 001 (1801) Smallpox eradication (1968–76) R—To carry out mass vaccination against smallpox and intensify reporting and surveillance, in order to keep the country free from smallpox.

LAB 001 (4201) Public health laboratory services (1959–) R—To provide the country with adequate national health laboratory services, starting with a central public health laboratory in Riyadh.

BSM 001 (3001) Irrigation development in the Wadi Jizan (Jan.–March 1974) UNDP/FAO—A consultant surveyed the potential health hazards in the project area, studied the endemicity of the diseases found and their impact on persons engaged in land reclamation, and suggested measures to be taken to improve health conditions.

SES 001 (3002) Sanitary engineering and municipal programming (1963–77) FT—To develop the municipal environmental health programmes, especially as regards water supplies, disposal of sewage and other wastes, housing, and town planning; and to organize an environmental engineering service for the purpose in the Ministry of Interior.

Somalia

SHS 001 (4001) Basic health services (1962–64; 1969–77) R UNICEF—To develop an integrated basic health service and a rural demonstration area to be used for the training of health personnel.

SHS 002 (4302) Centre for the repair and maintenance of medical equipment (1973–77) R—To establish a centre and a countrywide service for the repair and maintenance of medical equipment, and to train personnel.

HMD 002 (6101) Health Training Institute (1959–) R UNICEF—To train various categories of auxiliary health personnel, and provide inservice training and refresher courses.

HMD 003 (6201) Medical education (1973–77) R—To develop medical education through a programme of assistance to the Faculty of Medicine of the National University, Mogadishu, in which special attention will be given to the development of a "block-teaching system" curriculum and to organizing the department of basic medical sciences.

HMD 006 (4404, formerly 4401 and 4402) Nursing education (1961–) R—To strengthen the nursing and midwifery services through provision of courses at the nursing schools in Hargeisa and Mogadishu.

HMD 099 (6041) Health manpower development : fellowships R

MPD 001 (2001) Malaria pre-eradication programme (1962–77) R UNDP—To coordinate the development of the national malaria service and that of the rural health services, and to carry out malaria control measures as a step towards malaria eradication.

SME 001 (1801) Smallpox eradication (1967–) R VS—To carry out mass vaccination against smallpox and intensify reporting and surveillance in order to keep the country free from smallpox.

MBD 001 (1201) Tuberculosis control (1960–) R UNDP VA UNICEF—To implement a comprehensive national tuberculosis control programme, integrated into the basic health services.

SQP 001 (7401) Pharmaceutical services (1962–65; 1973–) R—To develop pharmacy and medical stores services and train newly graduated pharmacists in administrative and technical procedures.

LAB 001 (4201) Public health laboratory services (1966–) R—To develop sound technical methods for laboratory investigation and to provide training facilities, including inservice training, for all grades of technical staff.

Sudan

SHS 002 (4003) Public health advisory services, southern region (1972–) R UNDP FR UNICEF (UNHCR)—To strengthen the planning, organization and administration of the health services in the southern region.

NUT 002 (5602, formerly 5601) Nutrition programme (1966–76) UNDP UNICEF—To develop, through the Ministries of Health, Education, and Agriculture, nutrition services and programmes for improving the nutritional status of the population.

HMD 002 (6201) Medical and dental education (1971–77) R UNDP—To develop the medical faculty of the University of Khartoum and its dental school, special attention being given to improving teaching in the basic medical sciences, community medicine, and dentistry, and to the further training of teachers in their subjects and in educational science and methodology.

HMD 099 (6041) Health manpower development : fellowships R

ESD 001 (1001) Multipurpose epidemiological survey, Rahad irrigation scheme (1974–75) R—To effect a medical survey of the Rahad area prior to the construction of irrigation canals, in order to obtain a comprehensive picture of disease prevalence, determine diseases whose prevalence might increase with irrigation practices, and plan accordingly for the provision of health services in the area.

MPD 001 (2001) Malaria control programme (1963–77) R—To build up the technical, administrative and operational facilities for a control programme as a step towards malaria eradication, and at the same time to develop the rural health services, so that they may provide efficient support to the antimalaria operations.

MPD 002 (2002) Malaria eradication training centre (1963–) R—To train staff for the malaria service, and to provide training in antimalaria measures to staff of the general health services.

MPD 004 (2201) Onchocerciasis control (1963–) R—To carry out surveys of onchocerciasis infection of populations along the Nile north of Khartoum and in Bahr el Ghazal and Equatoria Provinces; to develop a programme for prevention and control of the disease; and to train personnel.

MPD 005 (2301) Trypanosomiasis control (1974–) FR (UNHCR)—To undertake studies on the epidemiology of trypanosomiasis, the ecology and behaviour of the human population, the vector and possible reservoir hosts; and to draw up plans for chemotherapy and chemoprophylaxis campaigns and for vector control.

Sudan (continued)

MPD 007 (2402) Leishmaniasis control (1974-) R—To make an epidemiological study of the prevalence of visceral leishmaniasis in the Upper Nile provinces, and studies of the vectors and reservoirs of the disease; to train national health personnel; and to formulate short-term and long-term plans for control.

SME 001 (1801) Smallpox eradication (1967-) R VS—To keep the country free from smallpox through mass vaccination of the population and the operation of a reporting and surveillance/containment system.

BAC 001 (1601) Cerebrospinal meningitis control pilot studies (1974-77) R—To assess, by means of field trials, the protective value of antimeningococcal vaccines and study their practical application in association with other programmes for the immunization of children.

MBD 001 (1201) Tuberculosis control (1974-) R—To implement an integrated national tuberculosis programme, study the applicability of various tuberculosis control measures in a selected area, and train personnel in control methods and techniques.

MBD 002 (1301) Leprosy control (1972-) R—To implement a comprehensive leprosy control programme integrated into the general health services in the provinces.

RAD 001 (4701) Training of X-ray technicians (1970-75) R—To train X-ray technicians from Sudan and neighbouring countries.

LAB 001 (4201) National public health laboratory service (1969; 1971-) UNDP—To establish a national public health laboratory service.

HWP 001 (5201) Occupational health (1969-77) R—To develop the division of occupational health and draw up an occupational health programme, particularly with respect to industrial hygiene.

DHS 001 (4901) Advisory services on vital and health statistics (1970-) R—To strengthen the vital and health statistics unit in the Ministry of Health, develop a vital and health statistics system, and train staff.

DHS 002 (4902) Infant and early childhood mortality survey (1974-) UNFPA—To organize a survey of infant and childhood mortality in order to obtain reliable estimates of the magnitude of the problem, factors affecting it, and effects of specific public health measures; to test statistical methods for collecting information on infant and childhood mortality in the absence of, or supplementary to, a vital statistics system; and to train national staff.

Syrian Arab Republic

SHS 001 (4801) Rehabilitation services (1973-77) R—To develop rehabilitation services in hospitals and train staff.

HMD 001 (4401) Nursing education, Damascus (1960-) R—To develop a pattern of nursing education that will provide graduate nurses to meet the needs of the health services.

HMD 002 (6101) Technical Health Institute (1973-) R UNDP—To develop the Institute in order to train health personnel of various categories for the expanding health services and to improve the technical standards of health workers.

HMD 003 (6201) Medical education (1974-) R—To develop medical education, special attention being given to improving teaching in the basic medical sciences and community medicine, and to the further training of teachers in their subjects and in educational science and methodology.

HMD 099 (6041) Health manpower development : fellowships R

ESD 001 (1001) Advisory services in epidemiology (1972-) R—To set up a department of epidemiology in the Ministry of Health and strengthen the epidemiological services for the control of the most prevalent communicable and noncommunicable diseases.

MPD 001 (2001) Malaria eradication programme (1956-) R

MPD 002 (2101) Schistosomiasis control (1974-77) R—To develop schistosomiasis control measures in the whole country, but particularly in the area of the Euphrates dam, and to train personnel to implement them.

MBD 001 (1201) Tuberculosis control (1965-) R—To implement a national tuberculosis control programme.

VIR 001 (1701) Communicable eye disease control (1966-73) R UNDP—To make a study of the epidemiology of trachoma and related eye infections and develop effective technical and administrative methods for their control; and to set up adequate services, within the public health services, for maintaining the control programme on a permanent basis and extending it. Provided—an ophthalmologist (1966-69; 1970-73) and a public health nurse (1966-73), a fellowship, and supplies and equipment.

The project area consisted of 4 governorates in the northern part of the country where the prevalence of trachoma was very high. The aims of the project have been achieved: health staff have been trained for the operational aspects of the control programme, which has been carried out entirely by nationals since November 1973. The administration of the programme has been placed under the health services.

The main control measure was treatment of the whole population with antibiotics. Results followed up in selected villages showed an appreciable reduction in the prevalence and severity of trachoma. The prevalence rate of trachoma, 3 to 6 months after the end of treatment, had been reduced from 65.6% to 41.9% in Deir-ez-Zor, from 72% to 11% in the Euphrates area, and from 4% to 2.6% in Lattakia.

Comparative therapeutic trials were set up in a limited area. A very good response was obtained to the 2 antibiotics used—tetracycline and chlortetracycline.

SQP 001 (7401) Faculty of Pharmacy, University of Damascus (1973-77) UNDP—To develop graduate studies in pharmacy, with emphasis on studies and research in pharmacology, at the Faculty of Pharmacy of the University of Damascus.

SQP 002 (7402) Laboratory for pharmaceutical quality control (1974-77) R—To organize a department to control drug registration, inspection and quality; and eventually to establish a modern drug control laboratory.

LAB 001 (4201) Public health and endemic diseases laboratory (1959-77) R—To develop the services of the public health and endemic diseases laboratory, and particularly the food microbiology section.

Tunisia

SHS 002 (4001) Strengthening and development of basic rural public health services and of services for family planning and maternal and child health care (1974-77) VG—To provide a framework within which to carry out research, training and other health-related activities, supported by studies to determine the most efficient way of organizing the health services, improving their utilization and increasing their coverage, particularly as regards maternal and child health care and family planning, and by studies to assess the effect of the measures for improving family health.

MCH 001 (9601) Family planning aspects of maternal and child health (1971-) UNFPA—To develop integrated maternal and child health and family planning services as part of the health services, train personnel, and develop biomedical research.

HMD 002 (6201) Medical education (1961-77) R—To develop the medical faculty of the University of Tunis, special attention being given to improving the teaching of the basic medical sciences and to the further training of teachers in their subjects and in educational science and methodology.

HMD 003 (6101) Auxiliary training (training of instructors) (1974-) R—To prepare instructors for the Avicenna School, Tunis, and for provincial schools engaged in training various categories of health personnel.

HMD 099 (6041) Health manpower development : fellowships R

MPD 001 (2001) Malaria eradication programme (1966-) R UNDP

MPD 002 (2101) Schistosomiasis control (1970-74) R—To undertake an epidemiological and malacological survey of schistosomiasis, intensify control measures, and train personnel. Provided—an epidemiologist/malacologist from 1970 until September 1974, and supplies and equipment.

By the time WHO's full-time assistance to the project came to an end, an important phase of the schistosomiasis campaign—the parasitological survey and mass treatment in endemic areas, had been completed. Since the inception of the project more than 150 000 persons have been examined and 10 000 cases have been detected, 84 % of which have already received specific medication. The remaining 16 % included absentees and cases where treatment was contraindicated. Re-examinations to check the results of therapy are being carried out; 99.3 % were found successful in Kébili. Follow-up of absentees will continue for an indeterminate period. In the second quarter of 1974 it was necessary to examine 140 persons to find one positive case. Only 6 out of nearly 400 water points surveyed required a further application of molluscicides.

CAN 001 (8101) Cancer control (1964; 1972-77) R—To develop the programme of the National Cancer Institute.

LAB 001 (4201) National public health laboratory service (1974-78) UNDP—To establish a national health laboratory service, train laboratory technicians, develop epidemiological surveillance, and improve vaccine production and pharmaceutical quality control.

DHS 001 (4901) Advisory services on vital and health statistics (1968-77) UNDP—To establish a permanent statistical service in the Ministry of Public Health and train national staff in health statistics techniques.

United Arab Emirates

SHS 001 (4001) Public health advisory services (1973-)—To develop the public health services. Under this project advice is being provided to the ministries of health on the strengthening of the administration of the services and the formulation, coordination, evaluation and follow-up of health programmes.

HMD 099 (6041) Health manpower development : fellowships R

MBD 001 (1201) Tuberculosis survey (1974-) R—To formulate and implement a tuberculosis control programme integrated into the general health services.

Yemen

SHS 001 (4001) Local health services, Taiz (1965-77) R UNICEF—To develop comprehensive health services for Taiz town and province, using a health centre in Taiz for demonstration and for training auxiliary health personnel, and establishing further centres and subcentres, training their staff and developing their services.

SHS 002 (4002) Local health services, Hodeida (1963-77) R UNICEF—To develop comprehensive health services for Hodeida town and province, using a health centre in Hodeida for demonstration and for training auxiliary health personnel, and establishing further centres and subcentres, training their staff and developing their services.

SHS 003 (4003) Public health administration (1961-) R—To improve the planning and administration of health services.

NUT 001 (5601) Food and nutrition programme (1971-) UNDP/FAO—To organize and extend school feeding and hospital dietary services, train personnel and promote nutrition education.

HMD 001 (6101) Institute of Health Manpower Development, Sana'a, phase I (1972-74) UNDP—To develop the Institute, which provides training for auxiliary health personnel; to demonstrate modern methods for the prevention and cure of certain diseases and for the control of communicable diseases; and to facilitate the organization of public health services. (This follows assistance in the training of auxiliary health personnel provided by WHO since 1956.) Provided—services of full-time staff for a total of 171 months, fellowships (34 months in all) and supplies and equipment.

Personnel trained during phase I included 31 nurses, 25 indigenous midwives and 8 laboratory aides. The training of male and female nurses, sanitarians and laboratory assistants is continuing during phase II of the project, and new categories of personnel will be trained to meet the needs of the country.

HMD 002 (6102) Institute of Health Manpower Development, Sana'a, phase II (1974-79) UNDP—To provide trained health workers for the health services.

HMD 099 (6041) Health manpower development : fellowships R

ESD 001 (1001) Epidemiological advisory services (1974-) R—To evaluate the epidemiological situation as regards communicable diseases of public health importance, establish priorities for their control, and prepare a control programme.

Yemen (continued)

MPD 001 (2101) Schistosomiasis control (1972-) R—To make epidemiological and malacological studies of schistosomiasis, formulate and implement a control programme and train the necessary staff.

SME 001 (1801) Smallpox eradication (1968-78) R VS—To carry out mass vaccination against smallpox and organize a reporting and surveillance system in order to keep the country free from smallpox.

MBD 001 (1201) Tuberculosis control (1970-) R—To implement a comprehensive national tuberculosis control programme, integrated into the basic health services.

LAB 001 (4201) Public health laboratory services (1971-) R—To establish public health laboratory services, starting with a central public health laboratory in Sana'a and provincial laboratories in Taiz and Hodeida; and to train personnel.

BSM 001 (3201) Environmental health services and community water supply (1969-) R—To develop the national community water supply programme, investigate and design various types of water supply systems, particularly for small towns and rural areas, and take measures for the solution of environmental health problems.

PIP 002 (3203) Water supply and sewerage, Sana'a and Hodeida, phase II (1973-75) UNDP—To carry out final engineering design for the first-stage water supply programme for Sana'a and complete preliminary engineering and feasibility studies for the first-stage water supply programme for Hodeida; to prepare sewerage master plans for Sana'a and Hodeida; and to carry out feasibility studies on the proposed first-stage sewerage systems for the 2 cities.

PIP 003 (3205) Strengthening of the rural water supply department in the Ministry of Public Works (1974-77) UNDP—To strengthen the rural water supply department to enable it to carry out its functions effectively, particularly as regards the preparation of a water supply programme for the country, the design of water systems, supervision of and assistance with construction, and coordination of international and bilateral assistance for the development of water supplies.

Intercountry Programmes (EMRO)

CWO 001 (CO 01) United Nations Development Programme coordinating services (1970-) R—To help countries of the Region to obtain and use UNDP resources for assistance in the health field. A special service, available to governments, has been established under the direct supervision of the Regional Director.

SHS 005 (4801) Regional training centre for technical orthopaedics, Teheran (1972-77) R—To develop the teaching programmes and improve the training at the centre.

MCH 001 (5101) Seminar on School Health Services, Baghdad (16-21 March 1974) R—To discuss the present position regarding school health services in the countries of the participants and exchange views on how they could be improved. There were 22 participants—physicians and nurses working in or responsible for school health services—from 12 countries. At the opening meeting, the Director, Technical Affairs, of the Ministry of Health of Iraq read a message from the Minister of Health. The

meeting was attended by officials of the Ministries of Health and of Education, the UNDP resident representative, observers from UNICEF and WFP and national observers, and WHO staff in Baghdad. Provided—2 consultants and the cost of attendance of participants.

MCH 002 (5102) Seminar on the Provision of Health Services for the Preschool Child, Mogadishu (21-26 July 1974) R—To discuss the delivery of health services to meet the needs of the preschool child and suggest ways in which they could be improved. There were 19 participants—physicians and nurses employed in maternal and child health services—from 13 countries of the Region. Provided—a consultant, 2 temporary advisers, the cost of attendance of participants and the services of staff members.

In July and August 1973 the consultant studied the services for normal preschool children and preschool children with special problems in Egypt, Iran, Iraq and the Syrian Arab Republic. Her reports provided background information for the Seminar.

MCH 003 (5103) Regional training programme in child health and midwifery (1970-74) R UNICEF—To improve the teaching of child health to medical and other health personnel at the American University of Beirut and plan and initiate a programme for training graduate and public health nurses in midwifery.

MCH 004 (5104) Fellowships, International Children's Centre, Paris (1965-) R—To enable maternal and child health staff from the Region to attend courses, seminars and other educational activities organized by the International Children's Centre.

MCH 005 (9601) Integration of family planning activities into health services (1970-) UNFPA—To assist countries of the Region in the planning, organization, management and evaluation of family planning programmes as part of the health services, in the training of all categories of personnel and in the upgrading of institutions for training and research in human reproduction and population dynamics.

NUT 002 (5601) Training in nutrition (1971-74) UNDP—To stimulate and strengthen nutrition programmes and services through the training of key personnel and follow-up assistance.

NUT 004 (5604) Regional nutrition training (1970-77) R FR UNICEF (FAO) (UNESCO)—To establish within the Region adequate facilities for the training of nutrition workers and high-level government personnel from ministries of health, agriculture and planning and from other ministries in various aspects of nutrition, with a view to promoting the formulation of nutrition policies and the execution of food and nutrition programmes.

The second regional course on nutrition for public health workers was held in Teheran from 28 October to 3 December 1974. Provided—a consultant (lecturer) and the cost of attendance of 21 participants from 12 countries of the Region.

HMD 001 (4302) Regional training centre for the maintenance and repair of medical equipment (1972-) R—To organize courses for training technicians to service and maintain hospital, laboratory and other equipment in health establishments in the Region.

HMD 002 (4402) Third Regional Nursing Seminar, Teheran (16-21 Nov. 1974) R—To promote the improvement of nursing services and nursing education programmes in countries of the Region. There were 64 participants, including 14 from Iran who attended at their Government's expense. Provided—a consultant, the services of 5 staff members, and the cost of attendance of 50 participants from 19 countries of the Region.

HMD 003 (4701) Radiological health (1973-75) R—To conduct a regional course, leading to a master of science degree with specialization in radiological health, at the School of Public Health, University of Teheran.

HMD 004 (6002) Participation in educational meetings (1959-77) R—To enable countries of the Region to participate in seminars, conferences and training courses organized in other regions and by other agencies.

HMD 007 (6101) Assistance to health institutes in the Region (1969-) R—To assist scientific institutes in the Region that are engaged in work of importance in the field of public health, especially in education and training of medical and health personnel.

HMD 008 (6201) Health manpower development (1965-77) R—To promote the development of health manpower in the Region at the subprofessional, undergraduate and postgraduate levels by a programme of assistance to the health training institutions, including particularly assistance in establishing new institutions.

HMD 009 (6202) Exchange of professors and scientific workers (1969-) R—To promote the exchange of ideas among the health professional faculties of the Region, and the general development of education in the health professions, through a programme of exchange visits of professors and scientists.

HMD 010 (6203) Training centres in educational sciences and medical pedagogy (1971-77) R—To promote the training of members of the medical faculties of the Region in educational science and methodology. (Assistance is being provided through the regional teacher-training centre at the Pahlavi University, Shiraz, Iran, and national centres.)

HMD 011 (6204) Workshop on the Needs for Research in Medical Education, Alexandria (11-14 March 1974) R—To promote the development of applied research in the Region. The participants—10 leading medical education and social and other scientists from 5 countries of the Region—advised on research that might be undertaken and on priorities. The report was widely circulated to the medical faculties in the Region. Provided—a consultant, and the cost of attendance of 7 participants.

HMD 013 (6007) Meetings of national fellowship officers (1974-77) R—To organize meetings of officials in international health sections of ministries of health for the purpose of reviewing and improving the WHO fellowships programme.

ESD 001 (1001) Epidemiological services (1969-) R—To assist governments in developing their epidemiological services in order to be able to cope with epidemics or natural disasters such as earthquakes and floods, and to develop epidemiological surveillance systems in conjunction with the development of basic health services.

MPD 001 (2001) Malaria coordinating meeting (1968-) R—To facilitate participation in intercountry malaria coordinating meetings for discussion and exchange of information between national authorities responsible for malaria eradication programmes.

During the period under review the Organization provided travel facilities for attendance at 2 *ad hoc* meetings between the Syrian Arab Republic and Turkey, held in Adana, Turkey, to examine the outbreak of malaria in the Adana area and its spill-over into the Aleppo area of the Syrian Arab Republic, and to synchronize the antimalaria operations on both sides of the border.

SME 001 (1801) Smallpox eradication (1967-) R VS—To assist countries of the Region in the planning, implementation and assessment of their smallpox eradication programmes, and also to assist national laboratories in developing diagnostic methodology and in improving the production of freeze-dried smallpox vaccine.

VIR 001 (1701) Communicable eye disease control (1973-) R—To assist countries of the Region in the planning, implementation and assessment of their national programmes for the prevention of visual impairment and blindness caused by communicable eye diseases, particularly trachoma and associated infections; and to provide advisory services with regard to other causes of preventable blindness, such as onchocerciasis and xerophthalmia.

VBC 001 (3701) Vector and pest control (1967-) R—To investigate problems arising from infestation by vectors of disease and pests, such as rodents, mosquitos and flies, and to promote control measures.

CAN 001 (8501) Symposium on Lymphomas, Hammamet, Tunisia (25-28 March 1974) R—To review the problem of lymphomas in the Region and evolve a common approach to the clinical, haematological and cytopathological exploration of the disease, and to its treatment and prevention. There were participants from 10 countries of the Region and from Turkey, and observers from 2 countries. The Government of Tunisia invited 5 experts and 2 representatives from IARC also attended. Provided—6 temporary advisers, the cost of attendance of participants, and the services of regional office staff members.

SQP 001 (7401) Clinical pharmacology (1973-) R—To train clinical pharmacologists from countries of the Region, with a view to the provision of information on drugs and the monitoring of drug usage.

ISB 001 (4203) Training course on vaccine and antisera control, Teheran (1 Oct.-14 Nov. 1974) R—To train personnel in techniques and methods of quality control of vaccines and sera. There were 13 participants from 10 countries of the Region. Provided—a consultant, the cost of attendance of 10 participants, and the services of a staff member as lecturer.

BSM 001 (3401) Solid wastes collection and disposal (1974-) R—To advise municipal authorities on the collection, treatment and disposal of solid wastes.

DHS 001 (4901) Medical records and statistical documentation advisory services (1966-) R—To provide advice on medical records in hospitals and health centres to countries in the Region that are developing medical records units, and to train national medical records officers.

DHS 002 (4903) Regional training centre for medical record science (1974-) R—To assist in establishing a centre to train

Intercountry Programmes (EMRO) (*continued*)

senior staff for directing medical record departments in major hospitals, controlling the implementation of new medical record systems and conducting national training courses.

7301 Drug dependence (1973–) R—To assess the nature and extent of the health problems posed by drug dependence in certain countries of the Region and advise on methods of prevention,

and of treatment and rehabilitation of drug-dependent persons

9602 Maternity-centred family planning programme (1972–73)
UNFPA—To develop family planning aspects of maternal and child health work in countries of the Region. Provided—a consultant in preventive medicine and 2 in maternity-centred family planning, and WHO publications. In January 1974 the project was merged with the intercountry project MCH 005 (9601).

WESTERN PACIFIC REGION

American Samoa

HMD 099 Health manpower development : fellowships R

SES 099 Establishment and strengthening of environmental health services and institutions : fellowships R

Australia

SHS 001 (4401) Community health nursing (June-Aug. 1974) R—A consultant assisted the Government in the planning and development of community health nursing services for indigenous people and advised on the training of indigenous people at the auxiliary level.

HMD 099 Health manpower development : fellowships R

British Solomon Islands Protectorate

SHS 001 (4001) Basic health services (1965–78) R UNDP UNICEF—To expand and strengthen the network of local health services and train auxiliary health personnel.

HMD 099 Health manpower development : fellowships R

MPD 001 (2001) Malaria eradication programme (1970–78) R UNDP—This programme follows the malaria eradication pilot project (1961–64) and the malaria pre-eradication programme (1965–69).

MBD 001 (1201) Tuberculosis control (July 1974–June 1975) R—A consultant is assisting the Government in reviewing and evaluating the tuberculosis problem and the control services, improving control methods, strengthening coordination between the tuberculosis services and the basic health services, training health staff engaged in tuberculosis control work, and promoting community participation in the programme.

DNH 099 Dental health : fellowships R

Brunei

SHS 001 (4101) Health legislation (June-Oct. 1974) R—A consultant made a review of health legislation and regulations and participated in the formulation of revisions to meet changing needs.

Cook Islands

HMD 099 Health manpower development : fellowships R

BSM 001 (3001) Environmental health engineering advisory services (1973–75) UNDP—To develop plans for sewage disposal systems and for an improved water supply system for the island of Rarotonga, and water supply projects for the other islands, as well as programmes and standards for improved housing, and other sanitation activities.

Fiji

HMD 001 (6201) Fiji School of Medicine (1972–81) R—To strengthen the School of Medicine.

HMD 099 Health manpower development : fellowships R

DNH 001 (5501) Dental health advisory services (July-Aug. 1974) R—A consultant advised on curriculum content in areas such as tooth replacement, restorative techniques, laboratory procedures and clinical pathology, and took part in the teaching of these subjects at the Suva dental centre.

LAB 001 (4201) Health laboratory services (1974–) R—During the period under review fellowships were awarded, in preparation for long-term advisory services scheduled to begin in 1975.

SES 099 Establishment and strengthening of environmental health services and institutions : fellowships R

French Polynesia

HED 099 Health education : fellowships R

HMD 099 Health manpower development : fellowships R

Gilbert and Ellice Islands

MCH 001 (9601) Family health (1971–75) UNFPA UNICEF—To organize and make available to the whole population services related to human reproduction and fertility, including services for spacing and limitation of births and for treatment of subfertility, and to carry out a programme of information and education of the public.

HMD 099 Health manpower development : fellowships R

BSM 001 (3002) Sanitation and health education (1974–77) R—To improve environmental health in the rural areas by developing rural water supply schemes, constructing water-seal latrines, and undertaking other sanitation work at village level; to establish a training programme for sanitation staff and auxiliary workers; and to establish a health education programme to promote the adoption of hygienic practices by rural inhabitants.

Guam

MCH 099 Maternal and child health : fellowships R

MPD 001 (2401) Control of intestinal parasitism (April 1974) R—A consultant assisted in carrying out a preliminary survey of intestinal parasites, investigating their epidemiology and ecology and the influence of social, economic and man-made environmental changes on their prevalence, and assessing their relative significance to provide a basis for setting priorities in communicable disease control programmes. He also advised on the planning of control programmes, control of intermediate hosts and vectors, mass chemotherapy, and problems connected with environmental biology and sanitation.

Guam (continued)

VPH 099 Veterinary public health : fellowships R

DNH 099 Dental health : fellowships R

BSM 001 (3201) Advisory services on community water supplies (March 1974; Oct.-Dec. 1974) R—Consultants assisted in the planning of water supplies.

Hong Kong

MCH 099 Maternal and child health : fellowships R

HMD 099 Health manpower development : fellowships R

ESD 099 Epidemiological surveillance of communicable diseases : fellowships R

OCD 099 Other chronic noncommunicable diseases : fellowships R

DNH 099 Dental health : fellowships R

LAB 001 (4201) Health laboratory services (Nov. 1974–Jan. 1975) R—A consultant was provided to assist in establishing a programme of work for the Institute of Immunology, advise on the training of professional and technical staff needed for vaccine production, and study the possibility of the Institute's producing influenza virus vaccine.

CEP 001 (3101) Treatment of agricultural wastes (Jan.-Feb. 1974) UNDP—A consultant reviewed proposals for the treatment of agricultural wastes, and advised the Agriculture and Fisheries Department on the setting up of trial treatment schemes for pig and poultry manure. A further visit is planned for 1975.

Japan

HMD 099 Health manpower development : fellowships R

OCD 099 Other chronic noncommunicable diseases : fellowships R

SQP 099 Specifications and quality control of pharmaceutical preparations : fellowships R

SES 099 Establishment and strengthening of environmental health services and institutions : fellowships R

Khmer Republic

SHS 001 (4301) Hospital administration (1971–77) R—To strengthen the medical care services, and particularly hospital and dispensary institutions, in Phnom-Penh and its environs and adapt them to the requirements of the emergency; to coordinate the medical and health care services to enable them to respond better to current demands; to optimize, through the formulation and continuous assessment of an overall health programme, the use of available resources for meeting the needs of the emergency; to train the necessary personnel; and to extend these activities to further areas as the situation improves.

SHS 002 (4801) Rehabilitation of the physically handicapped (1971–77) UNDP—To establish a unit that could later become a school for training physical and occupational therapists and set up a national rehabilitation service.

SHS 003 (4201 and 4202) Health laboratory services (1968–) R UNDP—To organize laboratory services to meet the needs of

the health and medical services, strengthen and develop the resources of the Institute of Biology, improve laboratory services in the hospitals in Phnom-Penh and in the provinces and in urban and peripheral dispensaries, and train laboratory staff.

MCH 001 (9601) Family health (1973–) R UNFPA UNICEF —To develop and strengthen (i) family health care, including maternal and child health, family planning and nutrition care, as part of the basic health services; (ii) maternity, family planning, paediatric and nutrition services in hospitals; and (iii) the family health aspects of the basic, postbasic, inservice and refresher training of all categories of health personnel concerned.

HMD 001 (6401) Education and training of health personnel (1971–) R—To develop and strengthen the centres for the training of all categories of health personnel and to develop a community health centre to serve as a model for centres to be established later in other parts of the country.

HMD 099 Health manpower development : fellowships R

ESD 001 (2901) Epidemiology and health statistics (1966–) R—To establish in the Ministry of Public Health an epidemiological and health statistical service responsible for planning and evaluating national disease control programmes; to study local epidemiological patterns of causes of morbidity and mortality as a basis for the formulation of such programmes; to reorganize the health statistics systems in hospitals, health centres, dispensaries and other health care institutions; and to train health service personnel in epidemiology and health statistics.

MPD 001 (2001) Malaria control (1962–) R UNDP—To extend antimalaria activities in order to protect the people living under malaria risk; and to promote the development of an integrated health service by training malaria personnel for the provincial and district health organization and involving the rural health services in malaria case-detection and treatment.

MBD 001 (1201) Tuberculosis control (1965–) R—To set up the nucleus of a national tuberculosis control service, with emphasis on preventive measures, and to carry out a control programme.

RAD 099 Biomedical aspects of radiation : fellowships R

SQP 001 (7401) Drug quality control (June-July 1974) UNDP —A consultant studied the findings and recommendations of a consultant assigned to the Khmer Republic in October 1969, obtained baseline data on the situation regarding drug quality control legislation, import and marketing practices and production and control services, and assisted in preparing an overall plan for phased development of drug production and quality control and a project document for submission to UNDP.

PIP 001 (3202) Preparation of a master plan for Phnom-Penh (water supply, sewerage and drainage studies) (1972–75) UNDP —To formulate a plan for improving urban health in Phnom-Penh and its environs through the provision of adequate quantities of safe water for domestic and other uses and of measures for the proper collection, treatment and disposal of waste water and the satisfactory removal of stormwater.

SES 001 (3001) Environmental health advisory services (1968–78) R—To establish a public health engineering unit in the Ministry of Public Health and coordinate its work with the work of other units of the Ministry; and to draw up and implement countrywide environmental health programmes.

Laos

SHS 001 (4001) Development of health services (1968–79) R UNDP UNICEF—To develop and strengthen the general health services, beginning in Vientiane Province, which will serve as a pilot area; to organize a central advisory body to review the organization, programmes and coordination mechanism of the health services; and to formulate and carry out a programme for training health manpower.

SHS 002 (4801) Rehabilitation of the physically handicapped (1967–75) R UNDP (UN Office of Technical Cooperation)—To assess the extent of the problem of the physically handicapped, plan and operate rehabilitation facilities and train staff for them, and review legislation dealing with the physically handicapped.

SHS 003 (4301) Organization of medical care (1974–80) R—To strengthen medical care services, and particularly the hospital system, and adapt them to the requirements of the present situation; to improve cooperation between the medical and health care services; and to optimize, through the formulation and continuing assessment of an overall medical care programme, the use of the available resources to meet current needs.

SHS 004 (4201) Health laboratory services, Vientiane (1953–77) R UNICEF—To establish a public health laboratory service and train laboratory personnel.

MCH 001 (9601) Family health (1971–78) UNFPA UNICEF—To provide effective maternal and child health care and advice on family planning with the ultimate objective of securing a higher standard of living for the family as a whole.

NUT 001 (5601) Nutrition advisory services (1968–76) R UNICEF—To improve nutritional levels in the community and to coordinate, under a national nutrition policy, all health aspects of food and nutrition work carried out by international and national governmental and nongovernmental agencies.

HMD 001 (6201) Royal School of Medicine (1967–78) R—To strengthen the faculty of the Royal School of Medicine.

HMD 002 (4401) Nursing education (1962–) UNDP UNICEF (USAID) (Asia Foundation) (Colombo Plan)—To set up a school of nursing and midwifery for training personnel for the country's hospital and health services, which are to be extended and improved.

MPD 001 (2001) Malaria control (1969–) R UNDP—To build up the administrative and operational facilities of the Central Malaria Service to the level required to carry out an antimalaria programme, in the first place in the Vientiane plain.

VDT 001 (1101) Venereal disease control (Nov. 1973–Feb. 1974) R—A consultant assessed the nature and extent of the venereal disease problem, reviewed the facilities available for the diagnosis, treatment and control of these diseases, made recommendations for strengthening the venereal disease epidemiological services, and prepared guidelines for future action.

DHS 001 (4901) Vital and health statistics advisory services (1968–78) R—To establish a vital and health statistics service in the Ministry of Public Health, and to train staff.

Malaysia

SHS 001 (4001) Development of health services — advisory services (1964–75) R UNICEF—To strengthen and expand the

basic health services and train personnel according to a consolidated plan which includes phasing of expansion and the development of uniform standards throughout the country.

SHS 002 (4101) Health legislation (Feb.–April 1974) R—A consultant assisted the Ministry of Health and other government agencies in the review of a draft public health Act and a study of the existing public health ordinances and regulations, with a view to updating them and harmonizing them with the new Act and determining how they can be uniformly applied throughout the country. He also assisted in assessing the need for additional legislative or regulatory provisions in the light of the country situation.

SHS 003 (4801) Rehabilitation of the physically handicapped (Oct. 1973–March 1974) R—A consultant assisted in drawing up guidelines for the development of the school of physiotherapy. These included advice on staff and student selection and on the preparation of a curriculum that was feasible with the resources available.

MCH 001 (9601) Development of maternal and child health/family planning programmes in the rural health services (1973–75) UNFPA—To strengthen the maternal and child health/family planning services as an integral part of the rural health services; to organize the training of medical, nursing and other health personnel in the clinical, medical and health aspects of maternal and child health/family planning; and to evaluate these activities.

NUT 001 (5601) Nutrition advisory services (1967–77) R UNICEF (FAO)—To plan and carry out nutritional surveys in a pilot area where an applied nutrition programme is being launched, develop nutrition education and supplementary feeding programmes and train the personnel needed for implementing and evaluating the health aspects of the programme.

HMD 001 (6201) University of Malaya (1965–) R—To strengthen the teaching staff of the Faculty of Medicine of the University of Malaya, particularly in the fields of preventive medicine, public health, nursing and medical recording.

HMD 003 (6401) Public Health Institute (1970–) R UNICEF—To develop the Public Health Institute, whose functions are to provide a high standard of training for health personnel, geared to the needs of the country; to undertake studies in public health and disseminate the knowledge thus gained; to provide services, not otherwise available, for the improvement of health programmes and for demonstration purposes; and to assist the Ministry of Health in the coordination of its various health training programmes.

HMD 005 (6203) National University Faculty of Medicine (Nov. 1973–Feb. 1974) R—A consultant advised the Dean of the Faculty of Medicine on the development of the Faculty, particularly as regards curriculum design, teaching/learning methodology, and student/teacher evaluation, and on its organization, including its relationship to the other faculties of the University and to the Ministry of Health.

HMD 099 Health manpower development: fellowships R

ESD 001 (2901) Epidemiological services (1971–) R—To establish, in the Division of Communicable Disease Control, Ministry of Health, an epidemiological and statistical service responsible for planning and evaluating national disease control programmes; to study the local epidemiology of causes of morbidity and mortality as a basis for the formulation of such programmes; to improve liaison and coordination among the Ministry's communicable disease control, medical records and

Malaysia (continued)

health statistics services, the laboratory services (particularly the Institute of Medical Research) and other peripheral government units concerned with disease control; and to train staff in epidemiological work.

MPD 001 (2001) Malaria eradication programme, Peninsular Malaysia (1967-82) R

MPD 002 (2002) Malaria control, Sabah (1961-82) R—To improve the control of malaria with the aim of eventually eradicating the disease.

MPD 003 (2003) Malaria control, Sarawak (1961-78) R—To maintain the gains already achieved by continuing antimalaria operations throughout the malarious areas; to provide health assistance, particularly to the groups engaged in developing natural resources; and to continue the training of basic health service personnel and voluntary agents for work in the malaria programme.

VBC 001 (3701) Vector control (June-Sept. 1974) R—A consultant assisted the Ministry of Health in establishing a vector control unit, and in organizing a nationwide survey of *Aedes aegypti* and a programme for its control.

DNH 099 Dental health : fellowships R

HWP 002 (5202) National seminar on the organization of industrial health services for small industries, Kuala Lumpur (Feb.-March 1974) R—Two consultants assisted in organizing a national seminar during which the health situation in small industries was reviewed and the possibility was studied of finding practical solutions to the problems of providing them with health services, taking into account available resources. There were 40 participants and the seminar was attended by a representative of ILO.

SES 001 (3001) Environmental health advisory services (1966-76) R UNICEF—To develop a national environmental health scheme, to implement sanitation projects, including water supplies for rural communities, through the health authorities and other governmental agencies, and to train sanitation staff.

DHS 001 (4901) Medical records (Sept. 1973-March 1974) R—A consultant assisted in a review of the medical records of the maternal and child health services and in formulating a standard system of records for use at all levels, a plan for using clerical assistance for record-keeping at health centres, and a programme of training in medical records.

4201 Institute of Medical Research (Sept.-Oct. 1974) R—Following a visit made in 1973, a consultant assessed the quality of blood transfusion laboratory technology and assisted with training in this aspect of the work of the blood transfusion service.

New Hebrides

SHS 001 (4001) Development of health services (1969-80) R UNDP UNICEF—To develop the general health services, establish methods and practices for the efficient operation of the rural health programme (particularly as regards maternal and child health, tuberculosis control and antimalaria and environmental sanitation work), and provide training, including in-service training, for health service personnel.

SHS 002 (4301) Hospital administration (Sept.-Nov. 1974) R—A consultant assisted in setting up a hospital records system for the new British National Service Base Hospital.

MCH 001 (9601) Development of family health services (1974-76) UNFPA—To develop and strengthen family planning services in urban and rural areas.

HMD 001 (4401) Nursing education (1970-) R—To formulate and implement short-term and long-term plans for the strengthening and development of a system of nursing education in the country.

HMD 099 Health manpower development : fellowships R

MPD 001 (2001) Malaria control (1970-81) R—To build up the operational facilities for an antimalaria programme and organize antimalaria operations within the framework of the general health services.

New Zealand

MNH 099 Mental health : fellowships R

DHS 099 Development of health statistical services : fellowships R

Niue

MCH 099 Maternal and child health : fellowships R

HMD 099 Health manpower development : fellowships R

DNH 099 Dental health : fellowships R

Papua New Guinea

HMD 001 (6201) Medical Faculty, University of Papua New Guinea (1970-80) R—To strengthen the faculty of the School of Medicine (formerly the Papua Medical College) and raise the standard of teaching.

HMD 002 (4401) Nursing education (1970-77) R—To strengthen the public health nursing aspects of the curricula of the schools of nursing and establish a postbasic course in public health nursing.

HMD 004 (6401) Education and training advisory services (1971-) R—To plan, implement, and evaluate various types of courses in training institutions under the jurisdiction of the Division of Medical Training and other institutions designated by the Government for the purpose of training government personnel.

HMD 099 Health manpower development : fellowships R

MPD 001 (2001 and 2002) Malaria control (1973-79) R UNDP—To intensify the antimalaria programme and extend it progressively, in order to reduce malaria incidence to a level that will not affect socioeconomic development; and to train staff for the programme.

MBD 001 (1201) Tuberculosis control (June-Sept. 1974) R—A consultant studied the epidemiology of tuberculosis and the measures employed for the control of the disease, recommended improvements, and assisted in integrating control activities into the work of the general medical and health services. He also advised on the teaching of tuberculosis in the medical course and in training programmes for nurses and other medical workers.

MBD 099 Mycobacterial diseases : fellowships R

VDT 001 (1101) Venereal diseases advisory services (April-July 1974) R—A consultant reviewed the implementation of the action plan which provides for the organization of district venereal disease committees, assessed the problems faced by the venereal disease centres and the measures taken along the highway and in rural and urban communities against the spread of the disease, and investigated the effectiveness of the treatment schedule recommended during his visit in October 1971.

LAB 001 (4201) Health laboratory services (1974–) R—To organize, strengthen and develop the central public health laboratory at Port Moresby; and to train various categories of technicians, particularly public health microbiology technologists and technical assistants, for operating the health laboratory services at different levels.

SES 001 (3001) Environmental health advisory services (1973–) R—To develop an environmental health programme in the Department of Public Health, improve the coordination of environmental health activities, carry out surveys of environmental health problems (particularly those related to water supply, waste disposal, and environmental pollution) throughout the territory, prepare designs, standards and specifications for water supply and waste disposal facilities, and review the training programme for health inspectors.

Philippines

SHS 001 (4001) General health services development (1969–77) R UNICEF—To improve the organization and administration of the health and medical care services, undertake national health planning in the context of overall planning for development, review health manpower education and training schemes, and develop working relationships between the national health administration and other agencies, both public and private, that are concerned with health.

SHS 002 (4101) National health planning (1972–) R—During the period under review the staff of the intercountry health planning training project SHS 003 (4101) collaborated in a review of the national health policy, in the training in planning of national health staff, and in the preparation of guidelines for a national planning exercise. Consultations were held in connexion with the general health services development project Philippines SHS 001 (4001) for the consideration of norms and procedures for the operations of the rural health services.

MCH 002 (9603) Maternity-centred family planning (1971–75) UNFPA UNICEF—To develop the staff and facilities of 25 teaching hospitals and associated teaching institutions with a view to the inclusion of maternity-centred family planning training and service in their daily work.

NUT 001 (5602) Nutrition advisory services (Jan.-Feb. 1974) R—Two consultants (a medical officer and a psychologist) assisted in a review of past and current studies in the Philippines on the impact of protein-calorie malnutrition on mental development and the benefits of supplementary feeding programmes; assessed the need for and the feasibility of a study on the effect of iodine supplementation on mental development in an area where endemic goitre is highly prevalent; and advised on the need for further studies in the field of nutrition and mental development.

HED 001 (4501) Research, development and training in family planning communications, Institute of Mass Communication,

University of the Philippines (1973–74) FR—A health education specialist advised on the production of model communication medical materials for training, and assisted in the introduction of new approaches in family planning communication, and in training family planning staff in the principles and techniques of interpersonal and mass communication.

HMD 001 (6401) University of the Philippines (1971–81) R—To strengthen the staff of the University of the Philippines, in particular that of the Institute of Public Health, which is the only school of public health in the country and which serves as a regional training centre and is used by WHO in the organization of courses on national health planning.

HMD 003 (9604) Nursing education in family planning (1971–74) UNFPA—To organize national workshops to prepare faculty members to introduce family planning in basic nursing curricula.

Four one-month workshops were organized for faculty members of 71 schools of nursing and midwifery. Following these workshops, teaching supplies and equipment were provided to the schools that had sent participants to the workshops. Follow-up visits were made to approximately two-thirds of the schools to give assistance in the integration process. A *Guide for the Teaching of Population Dynamics, Human Sexuality and Family Health in the Nursing and Midwifery Curricula* was published and is being extensively used by the school faculties.

The public health nurse assigned to the intercountry project MCH 003 (9603) acted as consultant for all the project activities. A consultant in nursing education was recruited for 3 months in 1973 to evaluate the educational soundness of the Guide and assist in its final preparation.

HMD 004 (9605) Assistance to the teaching programme of the Institute of Public Health, University of the Philippines, in family planning, human reproduction and population dynamics (1971–74) UNFPA—To expand the teaching facilities and activities of the Institute of Public Health in family planning; to strengthen the long-term academic programme of the Institute in family planning; and to develop the Institute's leadership in curriculum planning in family planning, human reproduction and population dynamics. Provided—2 fellowships, supplies and equipment, and local costs.

Four training courses were given for staff of the maternity-centred family planning programme of government training hospitals. The courses emphasized administration, planning, implementation, evaluation and teaching methods. The last course was held in May 1974. About 75% of the staff in 25 hospitals of the maternity-centred family planning programme have been trained. In addition, 2 seminars were held for school physicians.

HMD 099 Health manpower development: fellowships R

ESD 001 (1001) Communicable disease control (Sept.-Dec. 1974) R—A consultant reviewed the epidemiological features of diphtheria, pertussis and tetanus and assessed the control measures—in particular the immunization programmes—being undertaken.

A second consultant assisted the Government in elucidating the epidemiology of diarrhoeal diseases, especially the reasons for their high prevalence in both urban and rural areas, and in assessing the national diarrhoeal diseases control programme.

MPD 001 (2001) Malaria eradication programme (1958–) R

Philippines (continued)

MBD 001 (1201) Tuberculosis control (Nov. 1973–April 1974) R UNICEF—A consultant reviewed the operation of tuberculosis control programmes and assisted in conducting courses for provincial tuberculosis coordinators.

VPH 001 (2801) Rabies control (July–Sept. 1974) R—A consultant assessed the progress made in the production and control of LEP rabies vaccine since his visit in 1973, assisted in improving the quality of the vaccine so that it may meet international requirements, and made suggestions for commencing medium-scale production.

CAN 001 (8101) Cancer control (Dec. 1973) R—Following consultant services provided between 1967 and 1969, a consultant assisted in evaluating the cancer control programme in Rizal Province, in view of its importance as a possible model for the establishment of cancer control activities throughout the country.

MNH 001 (5401) Mental health advisory services (Nov.–Dec. 1974) R—A consultant assisted in organizing a national workshop on modern trends in the delivery of mental health and psychiatric care, with special reference to the role of nursing personnel in hospital and community-based health services.

MNH 003 (7301) Organization of drug abuse control programmes (Nov. 1974–Sept. 1975) R—A consultant is assisting the College of Education, University of the Philippines, in developing a drug education programme, integrated with health education.

CEP 001 (3203) Laguna de Bay water resources development (1972–74) UNDP/Asian Development Bank—The services of a technical officer (for 1 year from Aug. 1973) and of 3 consultants (2 in 1972 and 1 in 1973) were provided to assist the Asian Development Bank in connexion with the studies (on hydraulic control structure, water supply, and water quality) conducted by consultant engineering firms with the aim of providing information and engineering data for the immediate development of the water resources of the Laguna de Bay for various uses, including provision of flow control for the protection of areas of metropolitan Manila. WHO's tasks were to assist in the preparation of detailed terms of reference for the contractors engaged by the executing agency, review and comment on the short list of consultants and the proposals submitted by them to the executing agency, and provide technical advice on the pollution control and water quality management needs and the public health aspects of the water supply study.

The lake, which earlier had been regarded as a possible source of raw water for immediate development as a municipal water supply, was found in the course of the study to be mildly eutrophic because of the inflow of pollutants from the urban and rural areas of the watershed. The WHO staff helped to evaluate the degree of eutrophication of the lake, particularly with regard to the advisability of developing it immediately. In view of the degraded ecological state of the lake, it was recognized that the one-year studies undertaken needed to be continued and expanded. A proposal was therefore prepared for the continuation of water quality studies for 2 more years, with UNDP financing and WHO as executing agency.

SES 001 (3001) Environmental health advisory services (Aug.–Sept. 1974) R—A consultant assisted the local water utility administration in organizing and conducting a course on the operation of municipal water systems.

Republic of Korea

SHS 001 (4001) General health services development (1963–77) R UNICEF—To develop the public health services in the demonstration province (Chungchong Namdo) and the local health services in other provinces; and to train local health personnel at the Division of Training of the National Institute of Health.

SHS 003 (4301) Organization of medical care (Nov.–Dec. 1974) R—A consultant made a review of hospital intern and resident experience with a view to relating it more closely to the needs of the rural areas.

MCH 001 (5104) Maternal and child health services (1974–) R—To strengthen and develop maternal and child health services as part of the general health services; to carry out field studies with a view to increasing the coverage of basic maternal and child health care; and to improve the training of maternal and child health personnel.

MCH 002 (9602) Maternity-centred family planning (1973–74) UNFPA—To develop the staff and facilities of the 3 government hospitals for demonstration of and training in maternal and child health and maternity-centred family planning activities. Provided—3 fellowships, supplies and equipment, and local costs.

Following the recruitment and training of hospital physicians, nurses and statisticians, maternal and child health and family planning programmes were initiated in the Chungnam, Namwon and Andong hospitals, beginning in March 1973. The project is being absorbed by the national family planning project, which includes the extension of maternal and child care and family planning activities to 102 hospitals in the country.

HMD 001 (6401) Education and training of health personnel (1969–78) R UNFPA UNICEF—To provide education and training for health and medical workers, including undergraduate and postgraduate training for physicians and basic and postbasic training for nurses, sanitarians and other health workers.

ESD 001 (2901) Epidemiology and statistics advisory services (1968–78) R—To organize and develop a central epidemiological service and a disease intelligence network in the Ministry of Health and Social Affairs; to improve the collection, recording and utilization of health statistics; and to coordinate health laboratory services with the epidemiological services.

MBD 001 (1201) Tuberculosis control (1962–74) R UNDP UNICEF—To implement a comprehensive national tuberculosis control programme. Provided—a medical officer for 10 years, a nurse for 5 years, a consultant (March–July 1974) and periodic visits of the members of the intercountry tuberculosis advisory team (now the regional tuberculosis control team).

Following a short pilot trial in Seoul of the applicability and acceptability of the newly developed control methods, programme activities were rapidly extended to the whole country and channelled through the 192 government health centres. In 1967 activities were further decentralized to *eup/myun* level. Apart from the direction provided at the central level by the Ministry of Health and Social Affairs and a supervisory team of five or six specialized staff in each province, all the field activities were carried out by trained auxiliary workers. During the 12-year period, a total of 23.2 million infants and children were vaccinated with BCG (i.e., an average of 2 million a year,

which was about twice the annual number of births). Quality control of the vaccination was ensured by periodic assessments. Tuberculosis case-finding was largely based on sputum microscopy of persons with prolonged respiratory symptoms. The number of persons receiving domiciliary chemotherapy increased from 28 732 in July 1962 to 148 030 in October 1973.

Tuberculosis prevalence surveys were conducted in 1965 and 1970. The prevalence of pulmonary tuberculosis (cases confirmed by microscopy and/or culture examination) was 9.4 per 1000 population aged 5 years and over in 1965, and 7.4 per 1000 in 1970.

The project has received strong support from the Government, which increased the budget allocated to it by 631% in 11 years. Despite the results achieved, 60% of the estimated total number of pulmonary tuberculosis cases have yet to be discovered and included in the treatment programme, and the Government intends to expand activities during the coming years. The WHO regional tuberculosis control team will assist as required.

In 1974 the programme was evaluated by a consultant, who made suggestions regarding its future development.

VBC 001 (3701) National course on vector and rodent control (15-27 April 1974) R—Assistance was provided in connexion with a 2-week refresher course for staff responsible for vector control at the provincial level.

LAB 001 (4201) Health laboratory services (May-July 1974) R—A consultant assessed performance of the Venereal Disease Reference Laboratory (VDRL) test as carried out at the National Institute of Health, trained staff in the technique and helped to introduce the fluorescent treponemal antibody absorption (FTA-ABS) test. She also assisted in organizing VDRL serology units at intermediate level, in preparing control sera of graded reactivity, in organizing a proficiency teaching programme, and in improving the collection and transport of specimens for the diagnosis of gonorrhoea and the methodology used for the culture and identification of *Neisseria gonorrhoeae*.

BSM 001 (3201) Advisory services on community water supply and sewerage (1972-77) R—To plan and implement a comprehensive urban and rural water supply and sewerage programme.

FSP 001 (3601) Food hygiene (1974-77) R—To review food sanitation legislation, organize food sanitation and chemical quality control services at central and local levels, and carry out an inservice training programme.

Singapore

NUT 001 (5601) Nutrition advisory services (1968; 1970-73) R UNICEF (FAO)—To plan the development of public health nutrition services. Provided—a consultant (medical nutritionist) in 1968, and a public health nutritionist (1970-73).

A survey made in 1968, based on 31 maternal and child health centres, showed that 10% of the Chinese, 40% of the Malay, and 32% of the Indian children aged between 12 and 47 months were undernourished according to anthropometric criteria. A cross-sectional study, carried out in 1970 and 1971, in which the social and dietary backgrounds of a sample of well-grown and poorly-grown children were investigated, provided initial data on which to base staff training and remedial action. To provide further information, a special study was made of all cases of malnutrition admitted to the Outram Road General Hospital during a calendar year, and the findings were compared with

those in a control group that was not malnourished. In 1973 a survey of schoolchildren was made to determine their eating habits and from these to determine whether a school meals scheme was needed. Preparations were also made for a survey among industrial workers.

In May 1971 a nutrition unit was established in the Ministry of Health. It serves the functions of gathering basic data, training general health and maternal and child health service staff in nutrition, and providing for the care and follow-up of referred cases of malnutrition. The unit is already fully staffed and capable of carrying out all the functions necessary for the continual improvement of nutrition services, and plans have been made for its expansion.

During the period of the project inservice training was given to all staff concerned. The main emphasis is now on the inclusion of nutrition teaching in basic training; this has been started for several categories of workers but needs to be extended, in some cases with the provision of full-time teaching staff.

HMD 001 (6401) University of Singapore (1968-77) R—To strengthen the teaching staff of the Faculty of Medicine of the University, particularly in the fields of preventive medicine, public health and organization of medical care. Consultant services in other fields and fellowships were provided between 1952 and 1966.

HMD 002 (6301) Development of medical specialties (1971-75) R—To establish and organize specialist units in hospitals and to train in advanced techniques staff to man these units.

HMD 099 Health manpower development: fellowships R

ESD 001 (1001) Communicable diseases advisory services (1972-77) R—To develop and strengthen the epidemiological service of the Ministry of Health, study the epidemiology of the main causes of morbidity and mortality (particularly communicable diseases), develop procedures for the investigation, prevention, diagnosis and control of certain diseases, and train staff in epidemiological work.

DNH 099 Dental health: fellowships R

RAD 099 Biomedical aspects of radiation: fellowships R

PIP 002 (3303) Closed storm drainage system design (1973-75) UNDP—To draw up plans for closed storm drainage, pumping and water storage schemes to serve new developments and other selected areas; and to prepare a preliminary plan for a closed storm drainage and storm-water capture scheme to replace the existing open drain system serving the developed areas of Singapore.

Tonga

SHS 001 (4101) National health planning (Sept.-Dec. 1974) R—A consultant made an appraisal of the arrangements for health planning and gave guidance to national staff on the concepts and methods of health planning. He also assisted with the organization of a health and manpower planning exercise, designed in the context of the country's national development plan.

SHS 002 (4102) Health legislation (Sept. 1974-Jan. 1975) R—A consultant is reviewing the content of health and other relevant legislation and regulations and will submit recommendations concerning any revisions required.

Tonga (continued)

SHS 003 (4301) Hospital administration (1968-70; 1972-) R—To develop a system of hospital operation and management that will enable the Nuku'alofa hospital to meet the medical care needs of the population more effectively.

MCH 001 (9601) Maternal and child health/family planning (1972-76) UNFPA UNICEF—To organize and implement a family planning programme within the health services, particularly as part of maternal and child health care, and to train the necessary staff.

HMD 001 (4401) Nursing education (1969-73) R—To strengthen the basic nursing curriculum of the Queen Salote School of Nursing, improve the quality and increase the number of personnel needed for the expanding health services, and prepare nursing legislation. Provided—a nurse educator and 4 fellowships.

In the first phase of the project (1969-70), studies of community health needs and resources were carried out, a survey was made of the functions of nurses in the old Vaiola Hospital, and the 3-year curriculum was revised to include studies in public health nursing practice. In the second phase (1971-73) the survey of the functions of nurses was repeated in the new Vaiola Hospital to assess any changes in the role of the nurse in the new setting and, in preparation for the introduction of team nursing, a study was made of levels of patient dependency needs. A programme of inservice education for the hospital nursing staff was introduced. Also during the second phase, work began on the drafting of a proposal for a Nursing Act. Throughout the period of assistance regular reviews were made of the nursing curriculum and a revised curriculum, providing for greater correlation of theory and practice, was introduced in 1973.

While nursing legislation has still to be enacted, the project aims relating to the strengthening of the basic nursing curriculum have been achieved. When WHO assistance ended there were 4 trained national teachers and 2 national clinical instructors in the nursing school, and a total student enrolment of 78. It is expected that the inservice education programme for sisters and staff nurses will be continued and expanded.

HMD 099 Health manpower development: fellowships R

Trust Territory of the Pacific Islands

HMD 099 Health manpower development: fellowships R

DNH 099 Dental health: fellowships R

LAB 099 Health laboratory technology: fellowships R

SES 099 Establishment and strengthening of environmental health services and institutions: fellowships R

Viet-Nam

SHS 001 (4101) National health planning (1972-) R—To strengthen the national health planning unit in the Ministry of Health, formulate a national health policy and a national health and manpower plan, and train staff.

SHS 002 (4001) General health services development (Feb.-Aug. 1974) R—A consultant advised the national health administration on the public health nursing aspects of the general health services, assisted in developing the general health services, particularly those in rural areas, and participated in surveys and assessment of the health situation and available resources.

SHS 003 (4201) Health laboratory services (1964-) R UNICEF—To establish a central health laboratory service and train health laboratory workers; and, later, to organize regional and peripheral health laboratory services.

MCH 001 (9601) Family health (1973-77) UNFPA UNICEF—To strengthen family health services by improving the health care of mothers and children and providing married couples with information and services for the planning of their families.

HMD 001 (6001) Medical education (1972-77) R—To strengthen various aspects of the curricula of schools of medicine, with particular attention to preventive medicine and public health.

HMD 002 (6401) National Institute of Public Health (1969-82) R VD—To build up a national institute of public health which will serve as a centre for the planning, standardization, organization, coordination, implementation and evaluation of training programmes for various categories of medical and health workers.

HMD 003 (5501) Training of dental auxiliaries (1974-79) R—To strengthen the organization for the delivery of dental health services, develop dental service programmes, consolidate and develop programmes for training dental auxiliaries and educate the public in dental health.

ESD 001 (2901) Epidemiological surveillance and quarantine (1970-) R—To develop epidemiological services at the central and regional levels, strengthen the application of the International Health Regulations (1969) and train staff for these purposes.

MPD 001 (2001) Malaria control (1974-77) UNDP—To strengthen the antimalaria service in order to reduce malaria morbidity and mortality to the greatest possible extent, giving particular attention to high risk population groups; and subsequently to reduce malaria to a level at which it will no longer constitute a public health problem, with the objective of eventually eradicating the disease.

MBD 001 (1201) Tuberculosis control (1958-77) R UNDP—To set up a national tuberculosis control programme as a permanent part of the basic health services.

MBD 002 (1301) Leprosy control (Dec. 1973-Feb. 1974) R—A consultant estimated the extent of leprosy endemicity, evaluated the adequacy of the measures taken to check the disease, and submitted recommendations on the integration of the leprosy programme into the general health services.

ISB 001 (4202) Production and control of biologicals (1972-79) R—To improve the production and control of biologicals (especially cholera, typhoid and plague vaccines and freeze-dried smallpox vaccine); and the management, breeding and care of laboratory animals.

BSM 002 (3401) Solid wastes management (June-July 1974) UNDP—A consultant helped to assess the situation with regard to solid wastes management and to formulate a programme based on proposals for organizational and technical improvements. He also recommended alternative methods of refuse disposal and assessed the nature and extent of the international assistance that the Government would require to implement a programme.

CEP 001 (3101) National pollution control programme (1974-) UNDP—To formulate and implement a phased countryside environmental pollution control programme; to prepare legis-

lative and institutional arrangements for its implementation; and to establish a system of regional monitoring and laboratory facilities.

SES 001 (3001) Environmental health advisory services (1966-) R—To strengthen the environmental sanitation service in the Ministry of Health and introduce improvements in public water supply, human excreta disposal, refuse disposal, food hygiene and vector control in urban and rural areas.

DHS 001 (4901) Vital and health statistics advisory services (1969-75) R—To organize an efficient and up-to-date system of collecting and recording vital and health statistical data so as to produce vital and health statistics that will meet national and international needs; and to train personnel in the administration and operation of a national health statistical service.

4301 Hospital design (Sept.-Dec. 1973) R—Two consultants assessed the extent of the technical needs for reconstruction of hospitals and district health centres and established guidelines for this work. They also helped to establish a mechanism for consultation among the assisting agencies in order to ensure the adoption of standards for construction design and for equipment, and made recommendations on the future development of hospital and health care facilities.

Western Samoa

SHS 001 (4001) National health services development (1967-) R UNDP UNICEF—To develop and strengthen the organization and operation of the general health services, particularly at district and local levels; to improve the operation of the rural health programme; to organize inservice training for medical and allied personnel; to conduct epidemiological studies on the most important causes of morbidity and mortality in the country; and to plan disease control programmes as part of the general health services.

SHS 002 (4101) National health planning (May-Aug. 1974) R—A consultant helped to assess the accomplishments of the health sector under the country's current development plan and organize a planning unit in the Ministry of Health, and advised on and participated in the drawing up of the plan for the health sector to be incorporated in the forthcoming overall development plan.

SHS 003 (4301) Hospital administration (May 1974) R UNDP—The consultant who made a study of the workload of the proposed central sterile supply department, Apia General Hospital in 1973, made a return visit to assist in improving the management of the department and in drawing up and initiating a teaching programme for the staff.

MCH 001 (9601) Maternal and child health/family planning (1971-76) UNFPA VD UNICEF—To organize a family planning programme, including advice on the spacing and limitation of births and the treatment of subfertility, and train the necessary staff; to conduct surveys on the influence of high fertility and high birthrate on the health of mothers and children; and to undertake operational research on methods of meeting the country's family planning needs.

HED 001 (9602) National seminars on health education in family planning (April 1974) UNFPA—Two seminars on health education in family health were organized in April 1974 with the objective of strengthening community participation in health programmes. Community leaders and representatives of the

village women's committees took part in the seminars, in which emphasis was placed on developing a coordinated strategy for communication, highlighting the interrelationship of the factors influencing maternal and child health, nutrition and human reproduction.

HMD 001 (4401) Nursing education (1972-) UNDP—To improve the standard of nursing and midwifery education and services.

HMD 099 Health manpower development: fellowships R

MBD 001 (1201) Tuberculosis control (1971-74) R—To consolidate and assess the tuberculosis control service in the demonstration area of Leulumoega; to standardize the methods and procedures used by all districts; and ultimately to integrate the tuberculosis control services into the general health services throughout the country.

Intercountry Programmes (WPRO)

SHS 001 (0901) Public health advisory services (1961-) R—To meet requests from countries of the Region for advisory services in connexion with the planning of long-term projects or with specific problems. The following assistance was provided during the period under review:

Course in basic immunology, Singapore (May-July 1974). A consultant assisted with the course organized at the WHO Immunology Research and Training Centre, Singapore.

Health education, Philippines (Sept. 1974-Feb. 1975). A consultant is reviewing the situation with regard to health education in the Philippines and studying the health system, in order to identify the health education needs (including manpower) and the factors that will affect development.

SHS 002 (4001) Public health advisory services, South Pacific (1962-63; 1965-) R UNDP (South Pacific Commission)—To assist countries in the area in strengthening and developing their general health services, particular attention being given to maternal and child health work integrated into the general health services.

During the period under review, individual members of the team assigned to the project visited the British Solomon Islands Protectorate, Fiji, the Gilbert and Ellice Islands, the New Hebrides, and Tonga.

SHS 003 (4101) Training in the field of health planning (1968-77) R UNICEF—To acquaint national health administrators with the general principles of national planning for socioeconomic development and familiarize them with the principles and methods of national health planning within the framework of such development planning and as an integral part of health administration.

The sixth regional training course in national health planning, organized in collaboration with the Institute of Public Health, University of the Philippines, was held in Manila from 10 June to 16 August 1974. There were 12 participants (health administrators or teachers in the health professions) and an observer from 9 countries and territories of the Region.

SHS 004 (4102) Advisory services on national health planning (1968-77) R—To assist governments, not otherwise receiving long-term assistance in planning, in formulating national health and manpower plans as part of their national development plans.

During the period under review assistance was provided to Laos.

Intercountry Programmes (WPRO) (*continued*)

SHS 005 (4003) Project systems analysis (1973-78) R—To provide management assistance to ongoing WHO-assisted projects.

During the period under review, the project systems analyst provided assistance to the Republic of Korea (under project SHS 001 (4001)) in connexion with the preparation of a plan of work for implementing revised health services in Won San *myun*.

He also helped with a workshop, held in Malaysia from 12 to 18 December 1973, with the objective of determining the feasibility of using the project systems analysis method in project formulation and outlining changes required. There were 9 participants from 3 countries of the Region, and 5 from the African and South-East Asia Regions.

SHS 006 (4304) Hospital design and management (Oct. 1973-March 1974) UNDP—A team of 4 consultants visited countries of the Region to assess the hospital situation before preparation of detailed project proposals for UNDP consideration.

SHS 011 (4201) Health laboratory services (1971-) R—To assist in the organization and development of public health laboratory services, coordinated with other laboratory facilities, that can support epidemiological work, rural health services and sanitation projects.

During the period under review, assistance was given to the Gilbert and Ellice Islands and to Tonga.

MCH 002 (9602) Seminar on the Role of Nurses and Midwives in Family Planning, Manila (16-23 Sept. 1974) UNFPA—To consider family planning activities within the health services; exchange information on the extent to which nurses and midwives are involved in family planning activities in countries of the Region, the role they should play and the functions they should carry out; and discuss ways of integrating family planning activities into nursing and midwifery practice. There were 21 participants from 16 countries and territories in the Region and observers from USAID, the International Council of Nurses, the International Confederation of Midwives, and the International Planned Parenthood Federation. Provided—2 consultants, a temporary adviser and the cost of attendance of the participants.

MCH 003 (9603) Family health field advisory services (1971-) UNFPA—To provide advisory services to governments in connexion with the strengthening and development of family planning programmes and their integration into basic health services.

The following assistance was provided during the period under review:

Republic of Korea (Feb.-May 1974). A consultant advised the Ministry of Health and Social Affairs on the development and strengthening of the hospital family planning programme. Another consultant advised the Institute of Family Planning on the development of training programmes for supervisory staff. Assistance was also given in strengthening and developing the field practice component of family planning training courses.

Singapore (March-April 1974). The family planning programme, including the training aspects, was evaluated, the evaluation mechanism was strengthened, and advice was given on the type of research that might be carried out.

In addition, individual visits were made to the Gilbert and Ellice Islands, Laos, Malaysia, Papua New Guinea, the Philippines, the Republic of Viet-Nam, the Trust Territory of the Pacific Islands, and Western Samoa.

HED 002 (9605) Advisory team on the development of educational materials for family health (1972-) UNFPA—To assist national health and other departments in the production

and distribution of simple information material on family health, including family planning, maternal and child health, and nutrition. The project consists of workshops, and, following the workshops, visits of an advisory team to participating countries.

During the period under review the team provided assistance to a national seminar in Western Samoa.

HMD 001 (6001) Participation in educational meetings (1964-) R—During the period under review 5 fellowships were awarded to candidates from 4 countries of the Region for attendance at a course in basic immunology held in Singapore.

HMD 002 (6401) Institutions for the training of health personnel (1966-) R—During the period under review 6 fellowships were awarded to candidates from 4 countries and territories in the Region.

HMD 003 (9604) Teaching of family planning, human reproduction and population dynamics in medical schools (1972-) UNFPA—To assist in developing a systematic and coordinated approach to the teaching of family planning, human reproduction and population dynamics in medical schools of the Region.

During the period under review a consultant provided assistance to Malaysia (April-May and Sept.-Oct. 1974) and to Papua New Guinea (June-Aug. 1974).

HMD 004 (4302) Regional centre for the training of anaesthetists (1970-80) R—To assist in the operation of a regional centre in Manila for training anaesthesiologists for the countries and territories of the Region.

During the period under review fellowships were awarded to candidates from 3 territories of the Region.

HMD 005 (4401) Nursing advisory services, South Pacific (1967-77) R—To assist countries and territories of the area in strengthening nursing education and administration and in developing nursing services.

During the period under review assistance was provided to the Cook Islands, Fiji, Niue, and Tonga.

HMD 007 (6002) Regional teacher training centre for health personnel, University of New South Wales, Sydney, Australia (1971-81) R UNDP—To assist in establishing and developing a regional teacher training centre for health personnel at the medical faculty of the University of New South Wales, and national centres in selected countries of the Region.

The following intercountry activities were undertaken during the period under review: International Workshop on Curriculum Development (24 March-6 April 1974); International Workshop on Methods of Evaluation (8-21 June 1974); International Workshop on Teaching/Learning Methods (31 Aug.-14 Sept. 1974). These activities had a total of 50 participants from 12 countries and territories of the Region. Provided—consultant services and the cost of attendance of the participants.

In addition, consultant services were provided for a national workshop on audiovisual methods held in Auckland, New Zealand, from 26 to 28 June 1974, and for 2 national workshops for health professionals in the Republic of Viet-Nam, held in Saigon from 10 to 12 September 1974 and in Hué from 16 to 18 September 1974. Consultant services were also provided in preparation for a national workshop on curriculum planning to be held in Tokyo from 14 to 21 December 1974.

HMD 008 (4402) Technical Advisory Committee on Nursing, Manila (10-14 Dec. 1973) R—The Committee was convened, in response to a resolution adopted by the Regional Committee for the Western Pacific at its twenty-second session (1971), to formulate guidelines on the action that might be taken to provide

and strengthen nursing and midwifery services in national health programmes. The Committee was composed of 7 nursing experts from as many countries of the Region. Provided—3 consultants and the cost of attendance of the committee members.

HMD 010 (4403) Workshop on Training of Nursing Teachers, Manila (19-30 Aug. 1974) R—To exchange information on the situation regarding the preparation of teachers for schools of nursing and midwifery, discuss developments, and identify ways of improving the preparation of such teachers. There were 19 participants from 19 countries and territories in the Region. Provided—2 consultants, a temporary adviser, and the cost of attendance of the participants.

HMD 011 (4404) Nursing education (1974-78) R—To assist national health administrations in the development of basic and postbasic nursing and midwifery education programmes; to study, in cooperation with the staff of national health administrations and of other WHO-assisted projects, the feasibility of establishing an intercountry centre for postbasic education in nursing and midwifery to meet the needs of countries with only a small number of students; and, should the establishment of such a centre be considered feasible, to advise on and assist in planning it and setting it up.

During the period under review, the nursing adviser attached to this project visited Guam, Malaysia, Singapore, and the Trust Territory of the Pacific Islands.

HMD 012 (6201) Workshop on the Teaching of Nutrition in Schools of Medicine, Manila (24-30 Sept. 1974) R—To review the curriculum content and the methodology of teaching nutrition in medical schools in the Region, and to determine where improvements are needed and how best to effect them. There were 16 participants from 12 countries and territories in the Region. Provided—3 consultants, a temporary adviser and the cost of attendance of the participants.

HMD 013 (5401) Seminar on the Teaching of Psychiatry in Medical Schools, Manila (15-21 Jan. 1974) R—To review current practices in the teaching of undergraduates in the Region and determine the objectives of teaching psychiatry in the undergraduate medical curriculum and the appropriate role of the behavioural sciences in the teaching of psychiatry. There were 19 participants from 9 countries and territories in the Region and 4 observers. Provided—3 consultants and the cost of attendance of the participants.

HMD 014 (6003) Meeting of Deans of Medical Schools, Sydney, Australia (12-18 Feb. 1974) R—The Meeting had 20 participants from 13 countries and territories in the Region. Provided—2 consultants, 3 temporary advisers, and the cost of attendance of the participants.

HMD 018 (6101) Seminar on Medical Assistants, Manila (1-7 Oct. 1974) R—To demonstrate the value of medical assistants in improving the delivery of health services. There were 19 participants from 13 countries and territories in the Region and 2 observers. Provided—3 consultants and the cost of attendance of the participants.

ESD 001 (2902) Epidemiological and surveillance services (1972-81) R—To assist with epidemiological surveys, the strengthening of epidemiological and laboratory services, the establishment of disease intelligence networks, the investigation and control of outbreaks of communicable diseases such as cholera El Tor and other diarrhoeal infections, and the study of

special disease problems in the South Pacific area. The following assistance was provided during the period under review:

Fiji (Jan.-Feb. 1974) A consultant reviewed the diagnostic and laboratory procedures for leptospirosis, and advised on training needs, the type of survey to be carried out to determine the local epidemiology and epizootiology, and the treatment measures required.

MPD 004 (2201) Filariasis advisory services (1971-75) R—To assist governments, especially in the South Pacific area, in studying the epidemiology of filariasis and in carrying out or evaluating programmes for controlling the disease.

MPD 005 (2101) Schistosomiasis survey, Khmer Republic and Laos (1971-73) R—To assess the distribution and importance of schistosomiasis in the area; to identify the snail intermediate hosts and establish their distribution and the mode of disease transmission; and to formulate and recommend measures for preventing the spread of infection, taking into account such factors as population movement, irrigation schemes and other activities connected with the development of the Mekong River basin. Activities under this project have been limited to Laos. Provided—a malacologist for 2 years, and a consultant in the clinical and diagnostic aspects of schistosomiasis for 2 months in 1973.

In 1968 and 1969 the presence of cases of schistosomiasis on Khong Island, Laos, and in Kratié Province, Khmer Republic, was reported by WHO survey teams. A clinico-parasitological survey made on Khong Island, Laos, during 1973 confirmed that severe forms of schistosomiasis occurred, and that the disease attacked mainly those under 20 years of age. A systematic survey of molluscan fauna and experimental infection studies, which revealed no *Oncomelania* species, identified *Lithoglyphopsis aperta* as the intermediate host of schistosomiasis in the area. The distribution of *L. aperta* was found to extend from the border of the Khmer Republic north to Muang Song Khone, south-east of Savannakhet. The southernmost limit is assumed to be between Kratié and Stung Treng. In view of the preferred riverain habitat of *L. aperta*, the risk of it invading still water in man-made lakes seems remote. On the other hand, its control would present a problem, due to the low efficiency of molluscicidal operations. There is a need for further studies to determine more effective control measures, taking into consideration the characteristics of the snail and the conditions in the affected areas.

MPD 006 (2004) Malaria training (1973-) R—To provide training in malariology for professional and senior technical health personnel in the Region.

MPD 007 (2202) Fourth Joint WHO/South Pacific Commission Seminar on Filariasis and Vector Control, Apia (1-10 July 1974) R—To review the nature and extent of filariasis in the South Pacific area; consider new developments in the diagnosis of the disease and in the study of its epidemiology; assess filariasis control programmes in operation in the area, including measures for control of the vector species; and demonstrate surveillance and control methods for other vectors of public health importance, particularly *Aedes aegypti* and the closely related species of the *Stegomyia* subgenus. There were 15 participants from 13 countries and territories in the Region. Provided—a consultant and the cost of attendance of the participants.

BAC 002 (1601) Courses on bacterial infections of the gastrointestinal tract, Manila and Saigon (18-26 Feb. and 11-19 March 1974) R—To present a review of the situation in the Region regarding bacterial infections of the gastrointestinal tract, of new knowledge concerning their clinical aspects, diagnosis (including recent laboratory techniques), and treatment, and of

Intercountry Programmes (WPRO) (continued)

measures for their prevention by improvement of environmental sanitation. The course in Manila had 24 English-speaking participants from 15 countries and territories in the Region, and the course in Saigon 15 French-speaking participants from 6 countries and territories. Provided—for Manila, 3 temporary advisers, a lecturer, the cost of attendance of the participants and the services of staff members; for Saigon, 2 temporary advisers, a course director, the cost of attendance of the participants and the services of staff members.

MBD 001 (1201) Regional tuberculosis control team (1961–80) R—To assist countries and territories of the Region in assessing their tuberculosis programmes.

During the period under review assistance was provided to Laos, the Republic of Korea, the Republic of Viet-Nam, and the Trust Territory of the Pacific Islands.

MBD 002 (1202) Tuberculosis course, Tokyo (2 June–26 Oct. 1974) R (Overseas Technical Cooperation Agency, Japan)—To train national workers in the application of modern methods of tuberculosis control and stimulate the provision of practical training and demonstration in national institutions. The course, the ninth of a series, had 6 participants from 4 countries of the Region. Provided—a consultant, 6 temporary advisers and the cost of post-course country visits for all participants.

MBD 003 (1206) Regional BCG vaccine laboratory, Philippines (1973–79) R UNICEF—To develop and expand the Alabang BCG vaccine laboratory into a regional laboratory for the production of freeze-dried BCG vaccine for countries and territories of the Region.

MBD 004 (1204) Sixth joint WHO/South Pacific Commission course on tuberculosis and leprosy, Papeete (2–22 May 1974) R—To provide refresher training for medical officers in charge of tuberculosis and leprosy control activities in the countries and territories in the South Pacific area. There were 11 participants from 11 countries and territories of the Region. Provided—4 consultants, a temporary adviser, and the cost of attendance of the participants.

MBD 006 (1301) Leprosy control advisory services (1972–) R VL—To assist in assessing the leprosy problem in countries and territories of the Region, in strengthening leprosy services, and in training personnel.

VIR 007 (2902) Technical Advisory Committee on Dengue Haemorrhagic Fever, first meeting, Manila (5–7 March 1974) R—The Technical Advisory Committee is composed of temporary advisers and staff members from WHO headquarters and the South-East Asia and Western Pacific Regions. At the first meeting they reviewed the epidemiological situation of dengue haemorrhagic fever, the clinical and etiological criteria for diagnosis in each country where the disease is a problem, and recent progress in research on immunology, virology, entomology, control and treatment. A common strategy was established for the South-East Asia and Western Pacific Regions for epidemiological surveillance of the disease and surveillance of its vectors, and a technical guide was prepared. Provided—8 temporary advisers and the services of staff members.

DNH 001 (5501) Dental health advisory services (1972–) R—To advise on the establishment or strengthening of national dental health services, particularly those for preventive dentistry, on the basis of data gathered from national surveys, and to assist in setting up or improving programmes for training dental auxiliaries,

During the period under review, the dental health adviser provided assistance to Fiji, Papua New Guinea, the Philippines and the Republic of Viet-Nam, and assisted in planning a 2-month course in public health dentistry to be held in Singapore and Malaysia in May and June 1975.

MNH 001 (7301) Prevention and control of drug abuse (1973–) R VR—To determine the epidemiology of drug abuse in the Region and the availability of treatment, rehabilitation and research facilities.

The second stage of this project was completed during the period under review, when 2 consultants worked in the Philippines to gather epidemiological information on the drug problem and made recommendations on future action. Two consultants had already carried out a similar investigation in Malaysia in 1973.

RAD 001 (4301) Training in maintenance and repair of X-ray and other laboratory equipment (1969–77) R—To assist governments in assessing the needs regarding the maintenance of radiological equipment, advise on the organization of maintenance services, and assist in training X-ray operators in the installation, servicing and maintenance of X-ray equipment and in the proper use of radiographic and photofluorographic equipment.

The technical officer assigned to the project was in Malaysia from September 1973 to July 1974, and is providing assistance to the Philippines for 4 months from November 1974.

A consultant in radiography finished a 4-month assignment to the British Solomon Islands Protectorate in December 1973. He trained radiological technicians in the operation and care of medical X-ray equipment and made recommendations on training manuals and reference books required and on the improvement of radiation protection measures.

RAD 003 (4703) Radiation health advisory services (1973–) R—To assist governments in the organization, management and operation of radiation medicine and radiation protection services, training programmes in radiation health, and the collection and analysis of data on radioactive pollution of the environment. The following assistance was provided during the period under review:

A consultant (Nov. 1973–Aug. 1974) assisted the Philippines in the development of a programme for the training of radiological technicians and taught in 4 refresher courses.

Preparations were made to assist countries in the calibration of field dosimeters and in determining output from radiation sources, in establishing a basic national radiation dosimetry service and in training staff on how to assess the doses given to patients.

LAB 004 (4206) Course for laboratory workers on enteric bacteriology, including cholera, Manila (30 Sept.–25 Oct. 1974) R—To provide microbiologists from central public health laboratories with refresher training in methodology for the detection and identification of enteric pathogens, including the enterobacteriaceae, *Vibrio cholerae* and its biotypes, and *V. parahaemolyticus*, and to discuss their clinical and public health importance. There were 13 participants from 11 countries and territories of the Region. Provided—4 temporary advisers, the cost of attendance of the participants, and the services of staff members.

BSM 001 (3001) Environmental health advisory services, South Pacific (1965–77) UNDP—To assist countries and territories in the area to improve community water supplies and environmental sanitation in general.

During the period under review assistance was provided to Fiji, the New Hebrides, Tonga, and Western Samoa in the preparation of plans for rural water supply facilities.

BSM 002 (3201) Provision of basic sanitary measures (1968-77) R—To assist governments in carrying out studies on water supply, sewerage and other environmental health programmes, and in developing such programmes.

During the period under review the sanitary engineer assigned to the project made the following visits:

Khmer Republic (April 1974). To make a survey of the population (estimated at 162 500) living in areas without a community water supply and to advise on prevention of the spread of waterborne diseases.

Laos (Jan.-March 1974). To prepare preliminary feasibility engineering studies on water supply for 3 medium-sized provincial capitals, as a basis for negotiating bilateral aid and to discuss with the Ministry of Public Health legislation for control of the quality of drinking-water.

Laos (Aug.-Oct. 1974). To assist in the detailed planning of a phased programme to improve community water supplies and sanitation in hospitals, maternity centres, health centres, schools, orphanages, and rural areas.

Malaysia (Oct.-Dec. 1974). To assist the Ministry of Health in engineering studies of municipal sewerage schemes.

In addition, a consultant (March-June 1974) assisted the Public Works Department, Trust Territory of the Pacific Islands,

in organizing and conducting a course for waterworks operators, and advised on methods for improving the water supply systems in district centres.

CEP 003 Seminar on water pollution (Sept.-Oct. 1974) R—A consultant assisted in planning the seminar, scheduled to take place in 1975.

HWP 001 (5201) Course in occupational health, Sydney, Australia (4 Nov.-13 Dec. 1974) R—To provide orientation in the principles and practice of occupational health, prepare participants for contributing to the development and improvement of health and welfare services for workers, and provide information on recent advances in the organization and administration of occupational health services. There were 13 participants from 6 countries and territories in the Region, and 2 (privately sponsored) from Indonesia. Provided—a consultant and the cost of attendance of the participants from the Region.

DHS 001 (4901) Health statistics and records (1971-) R—To assist governments to develop a system of basic health statistics and records to meet the needs of the countries concerned and facilitate international comparison; and to train personnel.

During the period under review, assistance was provided to the Cook Islands, Tonga, and Western Samoa.

INTERREGIONAL ACTIVITIES

RPD 002 (OST 3000) Advisory Committee on Medical Research (1959-) R—To advise the Director-General on various aspects of WHO's research programme, including priorities for research, indication of short-term and long-term trends, and establishment of policy in various fields.

RPD 003 (OST 0001, 0003 and 0004) Research training grants, exchange of research workers, and research by individual investigators (1960-) R UNFPA VH—To enable research workers to acquire experience abroad in research or in research techniques when openings for the training they require are limited or non-existent in their own countries; to promote the exchange of scientific knowledge by enabling investigators to visit one or more scientists in other countries who are working in similar fields, for exchange of ideas, discussion of techniques and analysis of findings; and to supplement the cooperative research projects of the WHO programme by assisting projects, proposed by individual investigators, that are relevant to the Organization's research programme.

SHS 002 (Interregional 0689) Project systems analysis (1969-75) R—To apply the techniques of systems analysis and action research to providing a detailed, consistent methodology for the formulation of development projects; identifying management techniques for development projects so as to make them susceptible of monitoring, control and evaluation; specifying information system requirements for the support of project management; and proposing methods and mechanisms for propagating the development project concept, methodology and supporting systems.

SHS 005 (Interregional 0818) Meeting of regional community health advisers, Geneva (29 April-3 May 1974) R—Responsible officers from all WHO regions, headquarters and interregional staff and a consultant met for the purpose of ensuring the technical coordination of all aspects of the planning of programmes for community health services.

SHS 015 (Interregional 0559) Health services development institutes (1968-) R—To set up a chain of research and development institutes for the purpose of assisting national health administrations in programming the activities of health services and in developing them progressively, in accordance with changing social, economic and epidemiological situations in such a way as to improve their efficiency and effectiveness and enable them to satisfy to a greater extent the needs of the population. The first institute of this type to be set up is based on the Institute of Public Health Research, University of Teheran. A further institute has been established in Surabaya, Indonesia.

SHS 016 (Interregional 0787) Research in the epidemiology and control of single diseases (1972-1974) R—To study single diseases with well-defined mechanisms, using the disciplines of epidemiology, sociology, demography, mathematics, statistics, and computer technology, with the aim of improving knowledge of their dynamics for better planning and implementation of

control; to prepare study designs and research protocols with special emphasis on multidisciplinary uses; to design detailed systems for data collection, analysis, interpretation and presentation; and to develop epidemiological models of transmission processes for varying health status, and test their usefulness in the planning of control activities.

SHS 017 (Interregional 0788) Disability in the productive age (1972-74) R—To assess the prevalence of disability, its causes and the associated social and environmental factors, through home interviews and detailed examination of a sample of disabled persons between the ages of 35 and 54 in Belgrade, Yugoslavia; and to use the information from the survey for the planning of new approaches to reducing the occurrence or prevalence of disability in the population.

SHS 020 (Interregional 0863) Health laboratory services mission to the South-East Asia and Western Pacific Regions (1974) VK—A joint WHO/DANIDA mission visited laboratories and institutions in countries in the South-East Asia and Western Pacific Regions to evaluate the impact of the past 6 DANIDA courses in clinical chemistry and to explore the possibility of holding similar or modified courses in one of the countries visited. Former students and health authorities of the countries visited having expressed the need for a training course on quality control, DANIDA has agreed to support such a course in the near future.

SHS 021 (Interregional 0789) Course for clinical instructors in physiotherapy, Copenhagen (2 Sept.-30 Nov. 1974) VR—To provide training for qualified physiotherapists teaching in hospitals or in schools of physiotherapy. Provided—a temporary adviser, fellowships for 19 participants, and the services of staff members.

SHS 023 (Interregional 0660) Research in comprehensive health planning, Colombia (1970-) R VR PR (Government of Colombia)—To make the benefits of good health planning more accessible to WHO Member States, starting with activities in Colombia to promote planning in existing health agencies, including the formulation of health policy and the programming and evaluation of services.

SHS 024 (Interregional 0674) Methodological study on behavioural and operational components of health intervention programmes, Rotterdam (Netherlands) and Kaunas (Lithuanian SSR) (1970-75) R VG—To investigate methodological problems involved in a health intervention programme, using cardiovascular diseases as the intervention vehicle, with the specific objective of ascertaining the factors that determine (i) which individuals among those identified in a population as being at risk will participate in an intervention programme; (ii) successful adherence to the programme; (iii) the relationship of the cost of undertaking such a programme to the benefits in terms of the proportion of individuals who will be at less risk through intervention, by developing a cost-effectiveness model.

This study is being carried out in cooperation with two research teams, one from the Municipal Health Department of Rotterdam, the other from the Kaunas Medical Institute. WHO's

contribution consists of making available epidemiological, sociological and statistical advice and coordinating the data-processing methods used in both study areas.

SHS 025 (Interregional 1195) Operations research in health services development (1972-74) UNFPA—To support a project on a provincial scale in Iran, in which a complex of measures designed to provide a better solution for the major health problems of the area through an efficient health delivery system is in the process of implementation and evaluation. The project operates in close cooperation with project SHS 015 (Interregional 0559) (see above).

SHS 026 (Interregional 0866) Study of alternative approaches to meeting basic health needs of populations in developing countries (1974-77) R—To study different systems of meeting the basic health needs in developing countries, with a view to proposing systems that will result in improved utilization of existing services and mobilization of local resources and provide, at minimal cost, better coverage of the population.

SHS 027 (Interregional 0877) Study on planning, programming, design and architecture of hospitals and other medical care facilities in developing countries (1974-) R—To provide, at all phases of the provision of health care facilities, guidelines that will enable health authorities (i) to appraise the current situation and formulate short-term and long-term plans; (ii) to issue instructions regarding the types of hospitals needed; and (iii) to prepare regulations, licensing requirements or recommendations concerning architecture, area per bed, equipment, hygiene, disinfection and environmental sanitation, etc.

SHS 030 (Interregional 0830) Community involvement in solving local health problems (1973-77) R—To establish a trial system for the provision of health care and the promotion of social well-being in the Wendis and Nkoranza/Techiman districts of Ghana by the encouragement of community action as an integral part of rural community development, and by strengthening the existing system for health care delivery; to measure the effectiveness of such an approach; and to gain experience in the planning and implementation of projects for health care delivery in other parts of Ghana and in other countries.

SHS 031 (Interregional 0819) Workshop on Country Health Programming, Bangkok (14-19 Oct. 1974) R—To fit country health programming methodology, based on the relevant guidelines, to the needs of the Government of Thailand; to familiarize members of the Thai national health programming team, and WHO regional and country staff, with the methodology as amended; to learn for WHO the wishes of the Government of Thailand regarding assistance, scheduling and other arrangements for its national health programming, due to start in January 1975; and to reinforce the selective collection of information in the first stage of national health programming in Thailand. Provided—the cost of attendance of 12 participants, and the services of 6 staff members.

PPF 001 (Interregional 1001, 1002 and 1028) Advisory team on the health aspects of family planning (1970-) UNFPA—To give technical support to intercountry and country-based staff for the formulation and implementation of country health/family planning programmes; to review the existing situation of family health activities in various geographical areas; and to participate in interagency missions to assist in appraisal of the contribution of the health sector to national population programmes.

PPF 002 Synthesis of knowledge and information exchange on human reproduction, family planning and population dynamics (1974-) UNFPA—Through meetings, seminars, workshops,

conferences, and other group activities, to promote (i) exchange of information and experiences on the development of existing family planning/maternal and child health programmes; (ii) analysis of collaborative research and studies on specific aspects of family planning and population dynamics; (iii) analysis of special areas, leading to technological or subprogramme development in terms of future research, training and service activities; and (iv) collection and dissemination of information.

MCH 001 (Interregional 0473) Advanced course in maternal and child health for senior maternal and child health administrators, Warsaw (2 Sept.-27 Oct. 1974) R UNICEF—To provide maternal and child health administrators in key positions with up-to-date knowledge and skills in the planning, delivery, management and evaluation of maternal and child care, including family planning. The course, which was organized by the National Research Institute for Mother and Child, Warsaw, in collaboration with UNICEF and WHO, had participants from 12 countries. Provided—2 consultants and a temporary adviser.

MCH 012 (Interregional 1003, 1168 and 1169) Support to specific family planning aspects of health services, including the maternity-centred programme (1970-) UNFPA—To assist countries in the integration of family planning activities into health services, emphasizing the following programme areas: (i) the integration of family planning and maternal and child health care services; (ii) the interrelationship of nutrition and fertility; (iii) the management of abortion care; (iv) sterilization care and services; (v) infertility services; (vi) cytology services; (vii) psychological and psychosocial aspects of family planning; and (viii) human sexuality.

HRP 005 (HUR 0024) Epidemiological research on human reproduction (1967-) R

HRP 006 (HUR 0025) Biomedical research on human reproduction (1967-) R

HRP 008 (HUR 0022) Supplies for collaborating laboratories (1969-) R VH

HRP 016 (Interregional 0845) Task forces for collaborative research on the development of fertility-regulation agents (1972-) VH

HRP 017 (Interregional 0846) Research training (1972-) VH

HRP 018 (Interregional 0847) Meetings and publications on human reproduction (1972-) VH

HRP 019 (Interregional 0848) Consultant services in human reproduction to research institutions (1972-) VH

HRP 020 (Interregional 0849) Services to research in human reproduction (1972-) VH

HRP 029 (Interregional 1019 and 1054) Epidemiological research on health aspects of family planning (1970-) UNFPA

HRP 030 (Interregional 1029) Research team on evaluation of fertility control methods (1972-76) UNFPA—To carry out research on the acceptability, effectiveness, side-effects and use of fertility-regulating agents; to advise responsible authorities on the conduct of clinical trials of such agents and the assessment of their results; and to assist with relevant training programmes.

HRP 031 (Interregional 1019, 1020, 1028 and 1195) Operational research on health aspects of family planning (1970-) UNFPA

NUT 008 (NUT 0002) Collaborative research on nutritional anaemias (1961-) R (IAEA)

NUT 009 (NUT 0004) Collaborative studies on nutritional requirements of infants and children, and of women during pregnancy and lactation (1967-) R

NUT 010 (NUT 0006) Collaborative studies on nutrition and infection (1964-) R

NUT 011 (NUT 0009) Testing of new protein foods (1966-) R
UNICEF (FAO)

NUT 012 (NUT 0011) Collaborative study on anthropometry as related to nutritional status (1968-) R

NUT 013 (NUT 0012) Collaborative study on nutrition and mental development (1970-) R

NUT 014 (NUT 0013) Collaborative study on utilization of new protein resources (1969-) R

NUT 015 (NUT 0014) Collaborative study on prevention of vitamin A deficiency (1972-) R

NUT 016 (NUT 0015) Collaborative study on prevention of protein-calorie malnutrition (1973-) R

NUT 018 (Interregional 0436) Studies on nutritional megaloblastic anaemias (1966-) VG (Wellcome Foundation)—To carry out studies on the etiology and pathogenesis of nutritional megaloblastic anaemias and of tropical sprue.

HED 001 (HED 0001) Multidisciplinary study on motivation in health behaviour (1971-) R—To study various educational approaches and opportunities for encouraging desirable attitudes towards health and the use of available health services, both preventive and curative.

HED 002 (Interregional 1008, 1030 and 1035) Education of the public in family planning (1970-) UNFPA—To provide countries with technical support and guidance in the education and communication aspects of family planning, in order to achieve more systematic planning, implementation and evaluation of the services provided; and to promote intersectorial activities and extend WHO collaboration in health education with UNICEF, FAO, UNESCO, the International Planned Parenthood Federation, and other organizations, particularly as regards the health aspects of family life education, communications in family planning, and population dynamics.

HED 003 (Interregional 1020) Research in health education and behavioural sciences relevant to family planning (1971-) UNFPA—To uncover some of the factors (including cultural, behavioural, social and educational elements) that account for the lack of family planning practice in the target group (men and women of reproductive age) and that are amenable to educational treatment.

HMD 002 (Interregional 0579) Exchange of teaching personnel (1972-) R—To enable teachers of medical and allied health sciences to exchange experience and discuss teaching problems.

HMD 005 (Interregional 0469) Sanitary engineering centre, Rabat (1969-) R VD—To assist in developing a centre for advanced and postgraduate training of French-speaking sanitary engineers from countries of the African, European, Eastern Mediterranean and Western Pacific Regions.

HMD 007 (HMD 0005) Collaborative research on education of health personnel (1973-) R—To develop collaborative research covering the whole field of health manpower development, with special regard to manpower planning, and educational planning, methodology and evaluation.

HMD 008 (HMD 0006) Collaborative research on educational technology (1974-) R—To explore the application of recent advances in technology to educational and supervisory problems in the health field; to develop cataloguing systems and reference collections to permit easy transfer of information on audiovisual materials between institutes; to continue the study of transferability of learning materials for the continuing education of low-level auxiliary personnel; and to investigate, in a field trial, the validity of subjective appraisals of audiovisual materials.

HMD 009 (HMD 0007) Collaborative research on health manpower (1970-) R—To identify patterns of international migration of physicians and nurses and to design alternative interventions for each pattern.

HMD 011 (HMD 0003) Collection of information by collaborating institutions (1970-) R—To collect and analyse information and carry out research on the organization and integration of postgraduate education and on the training of teachers of health personnel.

HMD 012 (HMD 0004) Collection of data on education of medical and allied personnel (1963-) R—To make contractual arrangements for the collection of information on institutions and teaching methods for the education of medical and allied personnel.

HMD 016 (Interregional 0522) Refresher course in anaesthesiology, Copenhagen (3-23 June 1974) VK—The eleventh course in the series for WHO trainees having attended one of the annual courses at the Anaesthesiology Training Centre, Copenhagen. Provided—fellowships for 18 trainees from 16 countries.

HMD 017 (Interregional 0693) Training course on modern methods of management of nursing services, Rungsted, Denmark (2 Sept.–12 Oct. 1974) VK—Instruction was given to the 17 participants from 12 countries on management principles, concepts and processes and their application to nursing by measures including the improvement and evaluation of the quality and quantity of nursing care, and the development of objectives and methods for a programme aimed to provide better supervision. Provided—a temporary adviser, the services of staff of the Regional Office for Europe, and the cost of attendance of participants.

HMD 018 (Interregional 1031) Teaching of human reproduction, family planning and population dynamics in medical schools (1971-) UNFPA—To assist institutions in integrating subjects related to human reproduction, family planning and population dynamics into the curriculum, and in improving teaching methods emphasizing the team approach.

HMD 019 (Interregional 1033 and 1038) Strengthening of teaching of human reproduction, population dynamics and family planning in nursing and midwifery education (1971-) UNFPA—To develop programmes, incorporating family planning, for nursing and midwifery education at basic and postbasic levels and as part of all continuing education for nursing and midwifery personnel; to strengthen the capability of faculty members in curriculum analysis and development to achieve the above objective and assist them in the use of modern educational technology in teaching programmes in family planning; to prepare teaching materials and produce manuals, guides and models of instruction for different categories of nursing and midwifery personnel.

HMD 020 (Interregional 1037) Short-term training programmes on the health aspects of family planning and population dynamics (1972-) UNFPA—To assist in the short-term training of various categories of health personnel in health aspects of family

planning and population dynamics, including the organization of orientation courses and inservice and refresher training programmes.

HMD 021 (Interregional 1041) Teaching of human reproduction, family planning and population dynamics to auxiliary personnel (1971-) UNFPA—To incorporate the teaching of human reproduction into the basic training of auxiliary health personnel; to institute comparative trials of teaching/learning materials in different audiovisual formats; and to provide reference materials for the use of teachers in auxiliary health training.

HMD 022 (Interregional 1138) Training of key teaching staff in health aspects of family planning (1972-) UNFPA—To assist in strengthening family planning services by preparing health personnel at all levels to assume teaching and organizational responsibilities.

HMD 023 (Interregional 1140) Studies in education and training of health personnel for family planning programmes in health services (1971-) UNFPA—To plan and initiate research in education and training of auxiliary health personnel for family planning programmes, in collaboration with existing and planned training and research centres in the WHO regions.

A meeting of investigators (18-20 Dec. 1973) reviewed the work accomplished, planned closer coordination, and discussed the final phase of the studies. Provided—a consultant for 11 days and 3 temporary advisers for the meeting.

PPC 002 (Interregional 0546) Assistance in epidemics (1971-) R VC—To assist countries where epidemics of communicable diseases occur, or threaten to occur, by providing advice, facilities for diagnosis and assessment, and emergency supplies of vaccine, and meeting other requirements.

PPC 003 (Interregional 0581) Courses in epidemiology and control of communicable diseases (1974) R UNDP—A course was held in Moscow, in English, between 28 August and 23 October 1974 to train medical officers in basic practical epidemiology, in particular for the purpose of establishing a cadre of epidemiologists in communicable diseases in developing countries. Lecturers from the USSR, together with WHO staff members, assisted with the course, which included a field practice visit to the Stavropol and Alma-Ata regions. The course continued in Alexandria from 26 October to 21 December 1974, and included field training. Lecturers from Egypt and WHO staff members assisted. Provided—fellowships for 13 participants from 11 countries, lecturers, and administrative costs of host institutes.

A course, in French, similar to that outlined above, was held in Paris and Rennes from 15 October to 21 December 1973. Lecturers from France and WHO staff members assisted. After a few days at WHO headquarters, Geneva, the course continued in Bobo-Dioulasso, Upper Volta, from 7 January to 23 February 1974. Provided—lecturers and administrative costs of host institutes. (Fellowships for the participants—10 from 10 countries—were awarded under other projects.)

A further course, in French, with the same objectives, took place in Paris and Rennes from 7 October to 21 December 1974. It was followed by a few days at WHO headquarters and field training is being given in Bobo-Dioulasso from 13 January to 15 February 1975. Provided—lecturers and administrative costs of host institutes. (Fellowships for the participants—13 from 10 countries—were awarded under other projects.)

A third course, in English, with similar objectives to the Moscow/Alexandria and Paris/Bobo-Dioulasso courses, was held in Prague from 28 August to 27 November 1974 and is continuing in Delhi from 2 December 1974 to 28 February 1975. Three staff

members assisted with the Prague phase. (Fellowships for the participants—16 from 11 countries—were awarded under other projects.)

PPC 005 (Interregional 0811) Pilot project for intensified surveillance of poliomyelitis (1972-74) R—To carry out a pilot project for a surveillance system for the early detection of outbreaks of paralytic poliomyelitis; to exchange information on poliomyelitis cases and ensure uniform and prompt reporting; to monitor communities for the occurrence of wild polio viruses; and to carry out serological surveys to determine the age-specific prevalence of antibodies against the three types of polio virus.

A meeting of directors of the institutions participating in the pilot project was held at WHO headquarters, Geneva (13-14 Nov. 1974) to review operational and technical aspects. In addition to the 6 directors from European countries, one participant from the South-East Asia Region and one from the Region of the Americas attended the meeting. Provided—the cost of attendance of the latter 2 participants.

PPC 008 Systems analysis approach to communicable disease control: (LEP 0021) Leprosy (1971-74) R VL—To develop operational research on the feasibility of leprosy control methods under different socioeconomic and cultural conditions; to investigate the best ways of integrating specialized leprosy control services into the general health services and determine the cost/effectiveness of the various approaches; to establish the level of effectiveness below which a campaign ceases to represent a good use of resources; and to develop epidemiological models to provide an objective basis for planning and forecasting the results of leprosy control programmes. **(TUB 0033) Tuberculosis (1969-)** R—To carry out operations research in Algeria, Colombia, Japan, Norway and Venezuela on the practicability and applicability of tuberculosis control measures and their efficiency under different epidemiological and socioeconomic conditions; to investigate ways of integrating the tuberculosis control programme into the general national health services and determine the cost/effectiveness of different approaches; and to construct mathematical models permitting forecasts for national tuberculosis control programmes and, hence, more realistic sectorial planning, programme monitoring and evaluation.

MPD 001 (Interregional 0070) Advisory services in malaria (1961-79) R VM—To make provision for technical advisers who can be assigned at short notice to assist in the planning, implementation and evaluation of malaria control and eradication programmes and advise on special technical problems.

MPD 002 (Interregional 0079) Training programme for malaria (1958-79) R—To prepare international and national staff of professional and subprofessional categories for advisory, executive, and teaching responsibilities in malaria control and eradication projects by providing teaching aids, courses of instruction, facilities for field training, and group visits to antimalaria programmes.

MPD 005 (Interregional 0803) and IMM 004 (Interregional 0913) Course on immunopathological research in parasitic diseases, Geneva (7-19 Oct. 1974) R (University of Geneva)—To familiarize the 15 participants from countries in all WHO regions with appropriate immunological techniques for investigation of immunopathological phenomena in malaria, schistosomiasis, trypanosomiasis and filarial infections. Provided—assistance to the University of Geneva towards expenses of the course and the services of 6 staff members.

MPD 007 (MAL 0062) Collaborative research on methodology of malaria operations (1967-79) R

MPD 008 (MAL 0065) Collaborative research on biology of malaria parasites (1967-79) R

MPD 009 (MAL 0066) Collaborative research on epidemiology of malaria (1967-79) R

MPD 010 (MAL 0067) Collaborative research on chemotherapy of malaria and resistance of malaria parasites to drugs (1967-79) R

MPD 012 (Interregional 0172) Field research on special epidemiological problems of malaria (1962-77) R VM—To study all aspects of epidemiology of malaria in a savanna area of Africa; to prepare from the baseline data so obtained a mathematical model which will assist in indicating the attack measures of choice aiming at the interruption of transmission of malaria and against which the results obtained may be assessed; to recommend the future approach to malaria control in savanna areas of Africa; and to provide training facilities for research and laboratory workers on the methods and techniques applied in this project.

MPD 013 (PDS 0001) Collaborative research on schistosomiasis (1960-79) R

MPD 014 Collaborative research on onchocerciasis and other filarial infections (1974-79) R—This project supersedes those for collaborative research on filariasis (PDS 0008) and on onchocerciasis (PDS 0009) started in 1963 and 1964 respectively.

MPD 015 (PDS 0011 and 0015) Collaborative research on trypanosomiasis (African and American) and leishmaniasis (1974-79) R—This project supersedes projects in collaborative research on African and American trypanosomiasis, started in 1964, and on leishmaniasis, started in 1967.

MPD 017 (PDS 0002, 0006, 0012 and 0019) Collaborative research on chemotherapy of and laboratory techniques in helminthic infections, intestinal protozoa and fungi (1974-79) R—This project supersedes projects on chemotherapy of helminthiasis and on parasitological techniques (both of which started in 1961), on mycoses (started in 1965) and on amoebiasis (scheduled to start in 1974).

MPD 022 (Interregional 0052) Field investigations on schistosomiasis (1958-64; 1966-74) R—From 1958 to 1964 the aim of the project, then entitled "Bilharziasis advisory team", was to carry out surveys in various countries in order to estimate the seriousness of the schistosomiasis problem, suggest methods of preventing transmission, and plan control of the disease. The team consisted basically of an epidemiologist and an engineer, but biologists were seconded to the project from time to time, and consultants were recruited when required. Much information was obtained on the situation in Brazil, Burundi, Egypt (including the site of the Nasser Lake), Ethiopia, Ghana, Iran, Iraq, Ivory Coast, Kenya, Lebanon, Madagascar, Mauritania, Mauritius, Mozambique, Philippines, Puerto Rico, Rwanda, South Africa, Southern Rhodesia, St Lucia, Sudan, Surinam, Togo, Trinidad and Tobago, United Republic of Cameroon, United Republic of Tanzania, Upper Volta, Venezuela, and Zaire.

At the end of 1966 the team was reconstituted as a research team to carry out investigations on the epidemiology of schistosomiasis, train research workers, and evaluate assessment methods and techniques. The team was composed initially of an epidemiologist and a biologist, and later of a biologist and a laboratory technician; it undertook epidemiological studies in villages near Ibadan, Nigeria, and started a longitudinal study of the changing epidemiological situation in the Kainji Lake area, Nigeria.

In 1971 the project was given its present title and the aims of assisting governments in assessing the schistosomiasis situation and potential, particularly in areas of changing water environment, such as areas recently irrigated and man-made lakes, and of undertaking operational research. The team continued to consist of a biologist and a laboratory technician, but consultants were recruited as required. The longitudinal study of the epidemiology of schistosomiasis in the Kainji Lake area was continued, and showed that the prevalence of infection had doubled to 69% between 1970 and 1972. Several studies were also made of the situation in the Lake Nasser area, Egypt, both above and below the dams, and a survey of the FAO-assisted South Lake Chad irrigation project was carried out.

In 1971 assistance was provided to the Government of Morocco in establishing a programme for the control of schistosomiasis and advice was given on certain problems of water management and irrigation schemes. In the same year a study on *Schistosoma intercalatum* was carried out in Gabon and the United Republic of Cameroon which served to consolidate the knowledge of the morphology of this recently discovered species.

In 1973 assistance was provided to the Government of Malawi for assessment of the seriousness of schistosomiasis in major agricultural development schemes throughout the country. Assistance was also given to a field project in the Lake Tana area of Ethiopia.

In 1974 there was collaboration with the UNDP-assisted project of research on the epidemiology and methodology of schistosomiasis control in man-made lakes, with regard to the development of new techniques and trials of metrifonate for treatment of the disease.

The project has added considerably to the knowledge of the epidemiology of schistosomiasis, and particularly of the changes that occur in man-made lakes and in irrigation schemes. It has been able to introduce standardized techniques for assessment of worm burden in man and in the snail, and to develop a number of improved laboratory techniques.

MPD 023 (Interregional 0266) Field investigations on filarial infections (1968-75) R—To carry out applied research on problems of major importance in regions where filarial infections are most prevalent. Investigations are made by consultants representing various disciplines (e.g., epidemiology, parasitology, entomology, vector ecology, pharmacology, and seroimmunology), working individually or in groups.

MPD 024 Survey of parasitic diseases in relation to man-made ecological changes (1974-79) R—To develop principles and methodologies for reducing the risk of spread of certain parasitic diseases associated with the environmental changes occurring around man-made lakes and irrigation schemes.

MPD 025 Study on the epidemiology and control of filariasis in relation to urbanization (1974-79) R

MPD 027 (Interregional 0905) Symposium on Malaria Research, Rabat (1-5 April 1974) VM—To provide malaria research workers with an understanding of the most important problems encountered by field workers in malaria control and eradication programmes, and to familiarize the field workers with recent advances in research in malaria. There were 55 participants and 17 observers from countries of the European and Eastern Mediterranean Regions and 7 participants from the Center for Disease Control, Atlanta, Ga., USA. Thirteen WHO staff members also attended. The proceedings of the conference were published as a special number of the *WHO Bulletin* (Vol. 50, Nos. 3-4). Provided—the cost of attendance of the participants.

MPD 028 (Interregional 0658) Research on the epidemiology of schistosomiasis in man-made lakes (1971-77) UNDP VG (Edna McConnell Clark Foundation)—To undertake research for the development of effective and economical methods of schistosomiasis control in man-made lakes; in particular (i) to study the ecology and epidemiology of schistosomiasis in such lakes; (ii) to carry out preliminary control trials in the field; (iii) to make recommendations on methods of schistosomiasis control in man-made lake conditions; and (iv) to provide training in schistosomiasis research and control under those conditions.

MPD 029 (Interregional 0869) Control of Chagas' disease through housing improvement (1974-78) VG (Edna McConnell Clark Foundation)

SME 002 (Interregional 0541) Meetings of regional smallpox advisers (1968-) R—During the period under review no formal meeting of the advisers was held. In August 1974, under this project, a strategy meeting was held in New Delhi attended by all permanent WHO smallpox personnel in the subcontinent, staff from headquarters and the Regional Offices for South-East Asia and the Eastern Mediterranean, and the responsible national officers.

SME 003 (Interregional 0547) Smallpox surveillance and assessment team (1970-) R VS—To carry out regular independent assessments of the individual programmes in smallpox endemic countries; to identify, as the programmes progress, the specific operational problems and assist health administrations in carrying them out; to collect further information that is required for the future development of the global programme, and to conduct special epidemiological studies with a view to defining the patterns of transmission of residual smallpox, particularly with reference to nomads and other migrant groups.

During the period under review assistance was provided to the programmes in Bangladesh, Ethiopia, India, Nepal, Pakistan, and Sudan.

SME 004 (SPX 0001) Collaborative research on epidemiological and laboratory characteristics of human and animal poxviruses and on vaccine administration (1967-) R

SME 005 (SPX 0003) Collaborative research on variations of strains of poxviruses (1967-) R

BAC 001 (Interregional 0228) Seminars and training courses on cholera control (1965-) R UNDP—The following took place during the period under review:

Bombay, India (4-15 March 1974)—A seminar, in English, to provide information and practical training on the improved techniques for production of whole-cell cholera vaccines, and on the testing of toxicity and safety of bacterial vaccines in general. Provided—2 consultants, the cost of attendance of 13 bacteriologists engaged in cholera vaccine production from 10 countries, the services of 2 staff members, and laboratory supplies.

Monrovia, Liberia (1-10 Oct. 1974)—A training course, in English and French, on the diagnosis and treatment of cholera and other acute dehydration diarrhoeas. There were 22 participants from 21 countries. Provided—the cost of attendance of the participants, the services of 2 staff members, and supplies for practical training in the management of cholera.

BAC 002 (BDS 0006) Collaborative research on development of bacterial vaccines (1959-) R—To make field and laboratory studies on (i) enteric, pertussis and meningococcal vaccines, and (ii) diphtheria, tetanus and other toxoids, so as to develop more effective vaccines (including oral and live vaccines) and better laboratory tests for measuring their potency in terms of the protection conferred on man.

BAC 003 (BDS 0010) Collaborative research on cerebrospinal meningitis epidemiology and control (1964-) R—To make (i) field studies in Africa on the spread and control of cerebrospinal meningitis in endemic areas, and (ii) laboratory studies of *Neisseria meningitidis* isolated in these areas and of its resistance to drugs; and to develop more effective prophylactic measures (including vaccination) and therapeutic procedures, and study how they can be applied in the field.

BAC 004 (BDS 0011) Collaborative research on cholera (1964-) R—To make studies on the immunology of cholera, laboratory and field studies on improvement of cholera vaccines and studies on the genetics of vibrios; to develop techniques for the surveillance of cholera cases and carriers; to study the pathogenesis and pathophysiology of cholera; to carry out studies on treatment of cholera, particularly in children; to search for a suitable chemoprophylactic agent; and to investigate suitable methods for local disinfection of water, food, and food products in endemoeconomic areas.

BAC 005 (BDS 0012) Collaborative research on the epidemiology and control of enteric infections (1965-) R—To make studies of the etiology, epidemiology, immunology, treatment and control of shigelloses, salmonellosis and infections caused by enteropathogenic *Escherichia coli*, with a view to developing more effective methods of combating the high infant mortality due to enteric infections in developing countries.

BAC 006 (BDS 0017) Collaborative research on the epidemiology of streptococcal infections (1970-) R—To carry out studies in the etiology, epidemiology and control of streptococcal infections related to rheumatic heart disease, glomerulonephritis, skin lesions, and other conditions caused by streptococci.

BAC 007 (BDS 0022) Collaborative research on plague (1974-) R—To make epidemiological, bacteriological and immunological studies of plague, directed towards the improvement of methods for its surveillance and control.

BAC 020 (Interregional 0802) Task force for development of an expanded programme of cholera control (1973-) VC—To prepare guidelines on simple treatment, control measures and simple reporting systems, and assist in their implementation; to prepare a manual dealing with the problem of acute diarrhoeal diseases, including cholera, for the use of national health authorities; and to formulate, with the aid of an interdivisional programme team, a long-term programme for the control of acute diarrhoeas, including cholera.

BAC 021 (Interregional 0276) Cholera control team (1964-) UNDP—To render emergency assistance to Member States in controlling outbreaks of cholera; to help them, by training local medical and auxiliary personnel, to improve national capabilities for developing short-term and long-term programmes of surveillance of diarrhoeal diseases (including cholera), for providing treatment and for improving sanitation; and to assist in local production of intravenous and oral rehydration fluid and of cholera vaccines.

BAC 024 (Interregional 0854) Cerebrospinal meningitis (1974) VD—Supplies of cerebrospinal meningitis vaccine were provided to Mali.

MBD 001 (Interregional 0113.1) International course on the epidemiology and control of tuberculosis, Prague (3 April-19 July 1974) R—The thirteenth and last of a series of annual courses was organized in cooperation with the Postgraduate Medical and Pharmaceutical Institute, Prague, to acquaint tuberculosis workers in key positions with modern methods of controlling the disease on a national scale within the framework of the general

health services, and to familiarize them with recent knowledge in epidemiology and managerial sciences. The 3-month course in Prague (in English) was followed by 17 days' field training in Sri Lanka. Provided—fellowships for 5 physicians from 4 countries, the services of lecturers (including WHO staff members), and supplies and equipment.

During the 13 years that this activity was in progress, 174 persons from 54 countries received training.

MBD 002 (LEP 0004) Collaborative research on *Mycobacterium leprae* (1959–) R VL—To attempt cultivation of *M. leprae* in cell systems and in different cell-free semisynthetic media, and to study its metabolism requirements, with a view to its growth *in vitro*; to study the transmission of *M. leprae* to mice and other rodents; and to develop the armadillo as an experimental model and its use for providing large amounts of *M. leprae*, mainly for immunological studies.

MBD 003 (LEP 0015) Collaborative research on antileprosy drugs (trials) and chemoprophylaxis of leprosy (1960–) R VL—To develop controlled trials for comparing the action of conventional and lower doses of dapsone; to try new drugs (clofazimine, acedapsone); and to assess the value of chemoprophylaxis by dapsone. Also, to test in the laboratory, and later in man, new compounds and combinations of drugs for their antileprosy activity.

MBD 004 (LEP 0016) Collaborative research on immunology of leprosy (1969–) R—To study the antigenic composition of *Mycobacterium leprae*; to investigate cell-mediated immune response, circulating antibodies and antigen-antibody complexes in leprosy; and to develop a specific skin test by which *M. leprae* infection in the individual and in groups of populations can be measured.

MBD 005 (LEP 0017) Collaborative research on epidemiology of leprosy, including genetics (1962–) R—To study the possible association between genetically determined traits and the incidence and type of leprosy, as well as the possibility of developing specific cell-mediated immune response against *Mycobacterium leprae*; to develop an epidemiometric model of leprosy; and to apply a newly developed skin test (see MBD 004 above) in leprosy patients, high risk groups and endemic populations.

MBD 006 (LEP 0020) Collaborative research on diagnosis of leprosy (1971–75) R—To study methods for the diagnosis of leprosy, including the detection of infection or of the disease in its preclinical phase.

MBD 007 (LEP 0018) Collaborative research on pathology of leprosy (1961–) R—To study pathological manifestations of leprosy in nerves, muscles and viscera at the tissue and cellular level, and their mechanisms.

MBD 013 (Interregional 0190) Leprosy/BCG trial, Burma (1964–75) R—To carry out a trial to assess the value of BCG vaccination in the prevention of leprosy in the child population and obtain information on epidemiology, immunology, bacteriology, therapy and clinical aspects of leprosy in the total population.

MBD 014 (TBC 0029) Collaborative research on chemotherapy of tuberculosis (1966–) R (British Medical Research Council) (Indian Council for Medical Research)—To carry out controlled field trials to evolve standardized and acceptable treatment regimens.

MBD 015 (TBC 0030) Collaborative research on tuberculosis epidemiology and surveillance methodology (1960–) R (International Union against Tuberculosis)—To follow the epidemiological trend of tuberculosis and develop a methodology for surveillance of the disease.

MBD 016 (TBC 0031) Collaborative research on tuberculosis immunization (1966–) R—To study various vaccination techniques, investigate the immunogenic property of BCG and carry out multipurpose vaccination trials.

MBD 017 (TBC 0032) Collaborative research on microbiology of mycobacteria (1967–) R—To endeavour to standardize and simplify laboratory methods for the detection and identification of pathogenic mycobacteria.

MBD 019 (TBC 0028) Services supporting specific tuberculosis research activities (1967–) R—To arrange for the provision, on request, of mycobacterial antigens, mycophages, and immune sera to research institutions.

MBD 020 (Interregional 0615) Training in BCG vaccine production (1969–) VK—During the period under review three-month fellowships for training in production technology of freeze-dried BCG vaccine were awarded to national experts from 6 countries holding key positions in their country's BCG laboratory.

MBD 027 (Interregional 0901) Tuberculosis prevention trial, Bangalore, India (1965–) VG VK (Indian Council for Medical Research) (British Medical Research Council)—To measure the protective effect of various BCG products in India, a country which has a high level of unspecific infection.

VIR 006 (VIR 0005) Collaborative research on epidemiology of respiratory virus infections (1960–) R—To carry out studies of infection by influenza viruses in man and animals and provide training for laboratory work in national centres.

VIR 007 (VIR 0007) Collaborative research on trachoma (1958–) R—To carry out studies on the metabolic and antigenic properties of the trachoma agent, collaborative studies on the laboratory diagnosis of the disease, and laboratory and field studies on antibiotic treatments.

VIR 008 (VIR 0025) Collaborative research on viruses and rickettsiae in the tropics, and allied subjects (1968–) R—To determine the distribution and importance of viral diseases. Emphasis is placed on studies of viral hepatitis, measles, the prevalence of arboviruses, and on poliomyelitis vaccine.

VIR 009 (VIR 0026) Collaborative research on virus and rickettsial vaccines and other prophylactic agents (1962–) R—To prepare and store type 2 poliovirus vaccine seed of proved stability; and to carry out studies of poliovirus vaccine type 3 and of yellow fever vaccine.

VIR 011 (VIR 0003) Preparation, standardization and distribution of laboratory reagents for virus and rickettsial laboratories (1962–) R

VIR 013 (Interregional 0467) Team for special studies in virology, Africa (1968–) R—To conduct research on viral diseases of public health importance in tropical regions, to collect and disseminate information on such diseases, participate in collaborative studies, contribute to diagnostic services for hospitals, and train local personnel.

VDT 005 (VDT 0014) Collaborative research on the bacteriology, immunology and epidemiology of *Neisseria gonorrhoeae* (1968–78) R—To make comparative studies of bacteriological and serological techniques with a view to their standardization; to identify antigenic structures and study biotypes; to carry out epidemiological studies of gonorrhoea and assess methods of treatment and new drugs; and to determine cellular and humoral responses to *N. gonorrhoeae* or to antigenic fractions with a view to serological diagnosis and specific immunization.

VDT 008 (VDT 0020) Collaborative research on treponemes (1968-) R—To study the biology, biochemistry, immunology and serology of treponemes and the treponeme/host relationship, in particular the cellular and humoral responses to treponemes or to antigenic fractions.

VDT 012 (Interregional 0051) Field research in seroepidemiology of treponematoses (1968-76) R—To participate in epidemiological research on patterns of regression and recrudescence of endemic treponematoses (yaws and endemic syphilis) and advise on the epidemiological surveillance of these conditions, to assist health administrations in assessing the outcome of previous mass penicillin campaigns against them; to undertake immunological surveys to determine low-level transmission and the recrudescence potential for the invasion by venereal syphilis of previously endemic treponematoses areas; to furnish representative serum collections for use in immunological studies of treponematoses by collaborating laboratories and assess the suitability for field use of immunological tests for the treponematoses; and to provide serum collections for multipurpose immunological studies in other WHO programmes. These aims were extended to include assessment of the situation with regard to sexually transmitted diseases, in particular gonorrhoea and urethritis; serological surveys on virus infections (viral hepatitis, arboviruses), bacterial infections (brucellosis), parasitic diseases (trypanosomiasis); and studies in human genetics.

VPH 002 (Interregional 0808) Seminar on the Organization of Veterinary Public Health Services, New Delhi (10-18 Oct. 1974) R—To enable senior public health and veterinary administrators from different regions to discuss tasks and functions in veterinary public health and the economical organization of effective services to perform them. Emphasis was placed on the integration of veterinary public health into general health services, and an assessment was made of the social and economic importance of zoonoses control, food hygiene, comparative medicine and other veterinary health programmes. There were 27 participants from 19 countries, and representatives of FAO and the International Office of Epizootics also attended.

VPH 004 (VPH 0001) Collaborative research on the antigenic and epidemiological relationship between influenza viruses occurring in animals and man (1963-) R

VPH 005 (VPH 0002) Collaborative research on the improvement of rabies vaccines for man, and control of rabies in wildlife (1959-) R

VPH 006 (VPH 0003) Collaborative research on various zoonoses (1959-) R—To carry out research on the diagnosis, epidemiology, control and surveillance of various zoonoses, including leptospirosis, toxoplasmosis and other parasitic zoonoses.

VPH 007 (VPH 0006) Collaborative research on comparative medicine (1960-) R—To carry out research on cancer, teratological conditions, cardiovascular diseases, and neurological diseases of animals that are analogous to human diseases.

VPH 009 (VPH 0007) Collaborative research on food hygiene (1962-) R—To carry out research on food hygiene, including methods for determining the epidemiological pattern of, and for the control of foodborne pathogens, the standardization of microbiological laboratory methods, and the development of microbiological standards for foods.

VPH 010 (VPH 0012) Collaborative research on brucellosis (1959-) R—To carry out research on the epidemiology, diagnosis, control and elimination of brucellosis, with particular attention to vaccination and surveillance of the disease.

VPH 011 (VPH 0016) Collaborative research in comparative virology (1961-) R—To characterize animal viruses and establish typing systems and reference reagents in order to facilitate their comparison with viruses pathogenic for man.

VPH 012 (VPH 0017) Collaborative research on the socio-economic consequences of zoonoses in countries at different stages of development (1974-) R

VPH 022 (VPH 0810) Collaborative research on wildlife rabies (1968-) VG—To carry out such research on a regional basis, as well as research on techniques for the assessment of immunization programmes and fox control operations.

VPH 028 Collaborative research on cysticercosis and echinococcosis (1974-) VG

VBC 003 (VBC 0001) Collaborative research on chemical control of vectors (1953-) R—To carry out studies on the control of vectors and evaluate new pesticides emanating from the WHO evaluation and testing programme.

VBC 004 (VBC 0004) Collaborative research on rodent biology and control (1968-) R—To carry out studies on the ecology, biology and control of rodents, with particular emphasis on the screening of new rodenticides in the laboratory and in the field.

VBC 005 (VBC 0023) Collaborative research on equipment for the application of vector control agents (1959-) R—To test and report on various items of pesticide application equipment with a view to their suitability for making safe and effective pesticide application; and to carry out research on and develop new or improved forms of pesticide application techniques.

VBC 006 (VBC 0024) Collaborative research on the insecticide resistance and vector control aspects of international health (1953-) R—To carry out research on problems relating to insecticide resistance, especially the cross-resistance spectrum and the speed of development of resistance to new compounds; to provide WHO standard resistance test kits; and to make investigations on the vector control aspects of international health and disinsecting of aircraft.

VBC 007 (VBC 0026) Collaborative research on chemistry and formulation of pesticides (1968-) R—To study the chemical behaviour, analytical methods, and formulation of pesticides.

VBC 008 (VBC 0027) Collaborative research on toxicology and safe use of pesticides (1968-) R—To develop safe application procedures and protective clothing, and methods for the diagnosis, treatment and prevention of cases of poisoning, with emphasis on newly developed pesticides and techniques of application.

VBC 009 (VBC 0030) Collaborative research on biological control of vectors (1973-) R—To screen and evaluate potential biological agents (viruses, bacteria, protozoa, fungi, nematodes, and predacious insects and fish) for the control of insects of public health importance; and to test these in the laboratory and in the field and prepare technical protocols.

VBC 010 (VBC 0032) Collaborative research on the ecology and surveillance of vectors and mammalian reservoirs (1969-) R—To make surveys of and map densities and distribution of certain vectors of public health importance, as part of the Organization's programme on surveillance; and to carry out studies on the ecology of vectors and reservoirs and interpret seasonal and annual variations.

VBC 024 (Interregional 0270) Anopheles Control Research Unit No. 1, Kaduna, Nigeria (1960–) R—To carry out hut trials and village-scale field trials of new insecticides of potential value in malaria programmes; and to perform research on the ecology, biology and control of human malaria vectors and on the operational feasibility of biological and genetic control of anopheline mosquitos.

VBC 025 (Interregional 0306) Vector and Rodent Control Research Unit, Jakarta (1973–) R—To study (i) the ecology, biology and distribution of insect vectors of disease; (ii) the distribution, ecology and population dynamics of urban and commensal rodents, and (iii) techniques for the control of insect vectors and animal reservoirs of disease.

The work performed by the unit (then the *Aedes* Research Unit) in Bangkok between 1966 and 1973 is described in the Annual Report for 1973.¹

VBC 026 (Interregional 0403) Anopheles Control Research Unit No. 2, Kisumu, Kenya (1966–) R VM—To carry out extended field evaluation of insecticides for use in malaria programmes on a sufficiently wide scale to assess the potential value of these compounds for countrywide application.

VBC 027 (Interregional 0528) Arbovirus Vector Research Unit, Enugu, Nigeria (1973–) R—To study the ecology, distribution and extent of arbovirus vectors and hosts in Africa, with special reference to vectors of yellow fever, chikungunya, o'nyong-nyong and dengue; to carry out basic and operational research for developing suitable methods of controlling these vectors by both chemical and biological agents; and to contribute, as required, to investigations on the biology and control of major vectors other than mosquitos.

VBC 028 (Interregional 0529) Research Unit on the Genetic Control of Mosquitos, India (1969–) R VG—To conduct research into the feasibility of controlling *Culex fatigans*, *Aedes aegypti* and *Anopheles stephensi* on an operational scale by genetic manipulation.

VBC 029 (Interregional 0577) Vector Ecology and Control Research Unit, Republic of Korea (1969–74) R—To investigate the distribution, density, ecology and control of the mosquito vectors of Japanese encephalitis, carry out observations on the epidemiology of the disease and the interrelationship of the vectors, man and animals, and investigate the reservoirs of infection.

VBC 034 (Interregional 0618) Course on the biology and control of urban rodent and vector populations, Singapore (4–15 Nov. 1974) VK—To elaborate principles of and provide information on the ecology and control of rodents of public health importance, particularly rats, and to demonstrate modern methods of control with special attention to conditions in the Western Pacific, and to the biology and control of mosquito vectors of dengue viruses and Bancroftian filariasis in urban areas. The biology of the most important urban mosquito and housefly species was reviewed and methods for their control discussed and demonstrated. Special instruction was also given on the organization of municipal vector control services. There were 20 participants from 12 countries. Teaching was by 2 Danish experts from the Singapore Vector Control and Research Department. Provided—the services of an entomologist and an administrative assistant from WHO headquarters, a scientist from the WHO Vector and Rodent Control Research Unit, and the cost of attendance of participants.

VBC 044 (Interregional 0826) Conference on Intoxication due to Alkylmercury-treated Seed, Baghdad (9–13 Nov. 1974) VD—The Conference, sponsored by WHO in association with the Ministry of Health of Iraq and the Swedish International Development Authority, was called to make an assessment of the scientific data collected following the mercury poisoning accident in Iraq in 1972, to review the effects and to prepare a strategy for the prevention of such accidents. Special sessions were devoted to discussion on the presence of mercury in foodstuffs and the environment, and the effects of mercury on pregnant women, infants and the newborn. There were 15 participants from 13 countries and 15 observers from 8 countries. The Regional Director for the Eastern Mediterranean Region attended the Conference. Representatives of UNDP and FAO also attended. Provided—a consultant, 5 temporary advisers, the services of a staff member (toxicologist), and the cost of attendance of participants.

CAN 007 (CAN 0038) Collaborative research on new immuno-diagnostic procedures in cancer (1972–) R—To evaluate the clinical usefulness of new immunodiagnostic tests.

CAN 023 (Interregional 0458) Cancer control (1968–74) R—To assist in cancer control in different regions.

Programmes for the creation of regional teams for cancer control, and activities for the standardization of hospital cancer registries received support under this project; in PAHO, the activities resulted in the appointment of a regional adviser on cancer. In South-East Asia, a consultant (Jan. 1971–Jan. 1973) assisted in the pilot project for cancer control in India.

CVD 002 (CVD 3004) Meetings of investigators on the prevention of ischaemic heart disease (1966–) R—To assess the WHO-sponsored prevention trial on ischaemic heart disease—a double-blind trial, covering 15 000 people, in which the lowering of blood cholesterol is evaluated in terms of its effect on subsequent ischaemic heart disease.

CVD 005 (CVD 0001) Collaborative research on atherosclerosis (1969–) R—To clarify the etiology of the condition through studies, carried out in various population groups differing as regards the incidence and prevalence of atherosclerosis and which are at different socioeconomic and technological levels.

CVD 006 (CVD 0007) Collaborative research on cardiomyopathies (1963–) R—To carry out pathological, clinical, epidemiological and experimental research on the etiology, pathogenesis and, if possible, control of endomyocardial fibrosis and cardiomegaly of unknown origin in tropical and subtropical areas of Africa, Asia, and Latin America.

CVD 007 (CVD 0011) Collaborative research on rheumatic heart disease (1966–) R VG—To make studies on the prevalence, control and surveillance of rheumatic fever and streptococcal infections in children of school age and in adults.

CVD 008 (CVD 0012) Collaborative research in arterial hypertension (1972–) R—To carry out studies to determine the feasibility and the effectiveness of the control of hypertension in the community; and to assist in investigations into the pathogenesis and prevention of arterial hypertension.

CVD 009 (CVD 0013) Collaborative research on ischaemic heart disease (1966–) R—To test preventive measures against ischaemic heart disease and carry out studies on etiological factors in different environments.

CVD 010 (CVD 0014) Collaborative research on cerebrovascular diseases (1966–) R—To carry out studies on the main

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, p. 281.

types of cerebrovascular lesions in populations living under different environmental conditions and differing as regards the frequency of ischaemic heart disease.

CVD 011 (CVD 0017) Collaborative research on altitude and cardiovascular diseases (1966–) R—To carry out studies on the effect of high altitude on the development of hypertension and ischaemic heart disease.

CVD 013 (CVD 0018) Supply of drugs and small laboratory equipment (1963–) R—To provide for the purchase of drugs, chemicals and minor apparatus needed to ensure the smooth operation of various projects.

CVD 014 (Interregional 0565) Field research on cardiovascular diseases (1968–) R—To continue field investigations in specific areas of Africa and Asia where natural situations are suitable for studying the prevalence and incidence of primary diseases of the heart, rheumatic fever, and hypertension, but where local personnel for undertaking such work are lacking.

CVD 016 (Interregional 0287) Sixth advanced course in diagnosis, treatment and prevention of major cardiovascular diseases (in English), Copenhagen (3 Jan.–30 June 1974) VK—To train physicians from developing countries in clinical cardiology, including modern diagnostic techniques, and to give them basic training in respiratory pathophysiology, epidemiology and prevention of cardiovascular diseases. Provided—8 lecturers (including 2 staff members) and fellowships for participants from 9 countries and territories.

OCD 003 (NCD 0004) Collaborative research on diabetes (1974–) R

OCD 004 (NCD 0005) Meeting of Investigators on Endemic Nephropathy in Balkan Countries, Belgrade and Lazarevac (26–28 Nov. 1974) R—To review data on endemic nephropathy collected over the last 10 years in Balkan countries and to prepare a new approach to the investigation of known factors and probable influences in the development of the disease and of specific renal lesions. There were 15 participants from 6 countries, including one from Nigeria. Provided—the cost of attendance of participants and the services of a staff member from headquarters.

OCD 008 Training Conference on the Multinational Study of Vascular Diseases in Diabetics, London (21–24 Jan. 1974) R—To give training in techniques necessary for the study of vascular diseases in diabetics in different countries and to prepare the study programme. The conference was attended by 18 participants from 15 countries. Provided—the travel expenses of 14 participants.

DNH 002 (DHL 0003) Collaborative research on dental epidemiology (1969–) R—To carry out a series of field studies, based on standard methodology, with a view to obtaining comprehensive baseline data on world distribution of the main dental and oral diseases, following the trends of that distribution, developing further standard methods for oral health surveys, and updating existing methods.

DNH 003 (DHL 0004) Prevention of oral diseases (1974–) R—To promote (i) the use of the most effective and modern means available for the prevention of oral diseases; (ii) the organization and utilization of dental manpower so as to achieve optimum effectiveness in prevention and care; and (iii) the utilization of epidemiological data in planning and evaluating dental health services.

DNH 005 (Interregional 0843) Study on etiology of dental caries (1972–) VN—In a field study of dental caries etiology the relationships between dental caries and 18 elements in food, soil, water, tooth enamel, plaque and saliva were examined. The continuation of the study will involve clinical laboratory experiments, animal experiments, and further epidemiological investigations.

MNH 005 (MHL 0008) Collaborative research on the genetic, neurophysiological and biochemical basis of specific mental disorders (1969–) R

MNH 006 (MHL 0009) Collaborative research on biological psychiatry (1974–) R—To organize a long-term collaborative multidisciplinary programme for the study of the biological bases of affective psychosis and schizophrenia.

MNH 007 Social and epidemiological psychiatry (1974–) R—To carry out comparative studies of specific mental disorders in order to gain a better understanding of their form and natural history; and to develop methods for uniform evaluation of mental disorders in different cultures and for the collection and collation of statistics on mental disorders, in order to obtain a better picture of psychiatric morbidity in different countries with a view to assessing the need for different types of mental health services and evaluating their effectiveness.

MNH 008 (MHL 0010) Programme development in the neurosciences (1974–) R—During the period under review the second WHO Consultation on Neurosciences was held in Marseilles, France (11–13 Nov. 1974). The heads of the collaborating centres for research and training in neurosciences were present, together with outside consultants and 2 WHO headquarters staff members, to discuss proposals concerning the formulation and definition of 7 specific research projects.

MNH 011 (Interregional 0308) Development of mental health services (1971–) R—To assist in research programmes on the development and evaluation of mental health services, utilizing when relevant the advances made in biological and social psychiatry and in epidemiology.

MNH 012 (Interregional 0677) Course in psychopharmacology for teachers in medical schools, Bakkerne, Denmark (21 April–11 May 1974) VK—To provide psychiatrists from developing countries with training in modern psychopharmacological methods of treating mental disturbances. The course, which had 15 participants from as many developing countries, took place at the Course Estate Bakkerne, near Copenhagen; it covered the use of psychotropic drugs in inpatient and outpatient institutions, methods of control and follow-up, the place of psychopharmacology in treatment and rehabilitation, the effectiveness and adverse clinical effects of psychotropic drugs, and the biochemical and neurophysiological mechanisms of their action. Visits to hospitals, institutes and drug companies were organized. Provided—5 lecturers and the cost of attendance of the participants.

MNH 013 (Interregional 0465) International pilot study of schizophrenia (1971–) VN (National Institute of Mental Health, USA) (Field research centres in Aarhus (Denmark), Agra (India), Cali (Colombia), Ibadan (Nigeria), London, Moscow, Prague and Washington, D.C.)—To develop reliable methods for the identification and assessment of functional psychiatric disorders, particularly schizophrenia, and for the study and description of their course; to answer some of the basic questions about schizophrenia; and to produce simple and reliable instruments for investigations of social, cultural, biological and genetic factors that can cause, influence or prevent schizophrenia and for epidemiological studies of mental disorders.

MNH 015 (Interregional 0793) Study on the effects of the long-term use of cannabis (1972-) UNFDAC—To determine the physical, mental and social consequences of the use of different cannabis preparations taken at various dose and frequency levels for different time periods; and to determine the feasibility of carrying out a definitive comparative study of the mental and physical status and interpersonal and social adjustment of long-term heavy cannabis users and appropriately matched nonusers.

MNH 016 (Interregional 0794) Study on the therapeutic effectiveness of maintenance in the management of narcotic-dependent persons (1972-) UNFDAC—To determine the changes in patterns of behaviour in different groups of narcotic-dependent persons when they shift from illegal to legal sources of supply of narcotics under differing levels of supervision and in different sociocultural settings.

MNH 018 (Interregional 0796) Drug abuse control in Thailand (1972-) UNFDAC (UN) (Government of Thailand)—To improve the personal and social functioning of drug-dependent persons; to reduce the prevalence and incidence of the non-medical use of dependence-producing drugs; to stimulate the development of a flexible and dynamic system for preventive, therapeutic (including medical, vocational and social rehabilitation), after-care and follow-up activities that will foster continued planning and programme development; and to evaluate the effectiveness of various approaches and methods in achieving the above objectives.

MNH 022 (DDA 0002) Collaborative research on epidemiology and management of drug dependence (1970-74) R—To study the effects of chronic exposure to the smoke of marihuana cigarettes on cell cultures of lung and testicular tissue in order to determine the possible pathological effects of cannabis.

MNH 023 (DDA 0003) Collaborative research on dependence-producing drugs (1969-74) R—To investigate the development and the mechanisms of dependence on opium alkaloids in primates trained to smoke such substances voluntarily.

MNH 024 (Interregional 0747) Research and reporting programme on the epidemiology of drug dependence (1974-) UNFDAC—To establish a network of qualified research institutions that will collect and analyse existing data on the patterns and extent of drug dependence and abuse; to identify and obtain the additional information needed through fostering research and training programmes; and to issue guidelines for improving the comparability of data and research methodologies.

MNH 025 (Interregional 0812) Research on maintenance of drug-dependent persons, Iran (1973-) UNFDAC—To determine the relative effectiveness of methadone and other treatment regimes in the management of narcotic-dependent persons in Iran.

RAD 001 (Interregional 0475) Assistance to national radiation health programmes (1968-74) R—To assist governments in countries of the South-East Asia and Western Pacific Regions in planning and implementing radiation health programmes and in training health personnel. Provided—a medical officer (1968-70), a medical physicist (1971-74) and a secretary; consultants in radiation protection, and supplies and equipment.

Through visits to radiological institutes and authorities and attendance at national and regional scientific meetings and training courses, advice was given on radiation protection, particularly in radiation medicine, on the planning of services, dosimetry and calibration of dosimeters, and on problems of radiodiagnosis and radiotherapy.

RAD 002 (Interregional 0825) IAEA/WHO Seminar on Training in Nuclear Medicine, Vienna (18-29 Nov. 1974) R—The Seminar, which was held at IAEA headquarters, had 14 participants from 13 countries. It was attended also by representatives of the World Federation of Nuclear Medicine and Biology, the International Society of Radiology, the International Commission on Radiological Education and Information, and the International Commission on Radiological Protection. Provided—4 temporary advisers and the cost of attendance of participants.

RAD 004 (RHL 0001) Collaborative research on radiological protection measures (1960-) R (International Commission on Radiological Protection)—To support the studies carried out by the International Commission on Radiological Protection on maximum permissible doses from radiation and maximum permissible exposure to radionuclides.

RAD 005 (RHL 0002) Collaborative research on measurement of radiation and radionuclides used medically (1960-) R (International Commission on Radiation Units and Measurements)—To collect and evaluate the latest data and information on problems of radiation measurements and dosimetry; to prepare recommendations on the most acceptable principles, terminology and methods for current application; and to study basic physical parameters and measurement techniques, as well as medical and biological applications and radiation protection measures.

RAD 006 (RHL 0003) Collaborative research on radiation-induced biological and pathological changes (1960-) R—To study radiation treatment and leukaemia, chromosomal aberrations as biological indicators of the effects of radiation in man, chromosomal aberration rates in large population groups, and radiation-induced chromosomal aberrations in occupationally and accidentally exposed persons; and to carry out comparative studies on the identification of human chromosome aberrations and standardize scoring procedures.

RAD 007 (RHL 0005) Collaborative research on fundamental radiobiology (1964-) R—To study DNA alterations due to radiation and the possibility of repair; the formation of radicals in organic materials; the cellular reaction of tumours and the tumour bed to different therapeutic doses of radiation, particularly with a view to a better understanding of the somatic and genetic effects of radiation, and its effects on connective tissue; and methods of assessing the effects on normal and tumour tissues.

RAD 008 (RHL 0014) Collaborative research on medical physics, including medical radiation physics (1966-) R IAEA—To study special aspects of medical physics and the development of new techniques for application in medicine and public health; the characteristics of radiation dosimeters used for radiation medicine and radiation protection; the development of simple measuring devices to check diagnostic X-ray equipment; physical problems of replacement of radium for interstitial and intracavitary treatment by radionuclides suitable for afterloading techniques; and ionography (xerography and related methods) for the replacement of radiographic film and for other medical applications. The project also covered assistance to the joint IAEA/WHO postal dose comparison programme for cobalt-60 radiotherapy.

HMG 002 (Interregional 0820) Training course on advanced methods for the determination of haemoglobin variants, Bangkok (18-30 Nov. 1974) R—To familiarize workers on haemoglobinopathies with the recent methods of diagnosis of haemoglobinopathies and allied disorders, including chain separation, tryptic digestion and finger printing characterization. The course, which was given, in English, at the Department of Haematology,

Siriraj Hospital, Bangkok, had 8 participants from 8 countries. Provided—lecturers and the cost of attendance of the participants.

HMG 004 (HGN 0016) Collaborative research on genetics of special population groups (1968–) R—To study chromosomal, biochemical or medical anthropological subjects in populations of genetic interest.

HMG 005 (HGN 0017) Collaborative research on clinical genetics (1969–) R—To carry out research into widespread hereditary conditions such as congenital deafness, blindness and other eye defects, and skeletal deformities and other congenital malformations.

HMG 006 (HGN 0018) Collaborative research on the molecular basis of inherited disease (1970–) R—To carry out research on the detailed biochemical mechanisms which result in inherited disease, and explore the possibilities for permanent correction of heredity defects.

HMG 007 (HGN 0019) Collaborative research on population structure (1970–) R—To carry out research on the elements of population structure that are relevant to human genetics, their effects on gene frequencies, and the relationship between gene and genotype frequencies.

HMG 008 (HGN 0020) Collaborative research on immunogenetics (1969–) R—To make studies on the genetic control of immune responses in man and the localization of antigenetic specificity in serum proteins and in tissues other than blood as related to problems of organ substitution.

IMM 001 (Interregional 0567) Courses in immunology (1969–) R—The sixth of a series of courses was given at the WHO Immunology Research and Training centre, Lausanne, Switzerland, from 2 to 20 September 1974. The course, which was given in English, dealt with cell-mediated immunity in infectious diseases. Provided—6 temporary advisers and the cost of attendance of 16 participants from 14 countries (financed from the contribution of the Government of Switzerland to the Centre). A WHO fellow also attended as part of his training programme.

IMM 004 (Interregional 0913)—See under MPD 005.

IMM 005 (IMM 0001) Collaborative research on immunopathological mechanisms (1963–) R—To study the factors responsible for allergy, hypersensitive states, autoimmune diseases, and diseases produced by immune complexes or other immunopathological mechanisms; and to investigate the role of immunopathological mechanisms in the pathogenesis of infectious diseases, particularly parasitic diseases.

IMM 006 (IMM 0002) Collaborative research on immunochemistry (1963–) R—To study the chemical characterization of antigens and antibodies, including research on the structure and function of the different classes and subclasses of immunoglobulins; and to study complement and other serum components, other than immunoglobulins, involved in the immune response.

IMM 007 (IMM 0003) Collaborative research on immunizing agents (1964–) R—To develop and improve immunizing, immunoprophylactic and immunodiagnostic agents and techniques; and carry out studies to obtain more effective immunizing agents.

IMM 008 (IMM 0005) Collaborative research on basic immunological mechanisms (1966–) R—To carry out research on the mechanisms and control of antibody formation and cell-mediated immune response, tolerance, reaction to histocompatibility antigens, and characterization and role of immunologically competent cells; and studies on phagocytosis and other factors of natural resistance.

IMM 009 (IMM 0023) Collaborative research on immunodiagnostic methods (1963–) R—To develop or improve methods for the detection and quantification of humoral and cellular immune responses in man.

IMM 016 (Interregional 0912) Meeting of Heads of WHO Immunology Research and Training Centres, Geneva (1-3 Aug. 1974) R—To review progress in the work of the centres and their teaching methods, and to compare results. The opportunity was taken also to review the objectives of the research and training programme. The meeting was attended by the 8 heads of centres, 5 of whom participated as temporary advisers and 3 as members of the interregional team for research and training in immunology. Provided—in addition to the 5 temporary advisers, the services of staff members.

IMM 018 (IMM 0024) Supplies for collaborating laboratories (1964–) R—To provide for the purchase of small amounts of specific reagents and supplies for laboratories collaborating in the WHO immunology programme.

IMM 019 (Interregional 0478) Development of research and training in immunology (1967–) R VD VG—To advise on training, organize courses in immunology and immunological techniques, and to collaborate in research and in developing regional training centres for research in immunology, especially as related to parasitic and other tropical diseases.

IMM 020 (Interregional 0823) Standardization of immunological reagents (1973–) VD—To standardize immunological material used in clinical laboratories.

IMM 021 (Interregional 0455) Training course in immunology, Delhi (16 Sept.–12 Oct. 1974) VK—The third in a series of courses on immunology was held at the Indian Council for Medical Research/WHO Immunology Research and Training Centre, Delhi; it concentrated on cell-mediated and humoral responses, with special reference to malnutrition and infectious diseases in the tropics. There were 14 participants from 6 countries in the South-East Asia Region, and 16 temporary advisers from 5 countries. Provided—the cost of attendance of participants.

IMM 024 (Interregional 0831) Research on immunity in schistosomiasis (1973–78) R—To develop techniques for the study of cytotoxicity and the labelling of schistosomulae using radioactive chromium; and to assist epidemiological and morbidity studies by a research group from the United States of America in 2 districts of Kenya in collaboration with the national public health laboratories.

SQP 002 (PHM 0002) Specifications for pharmaceutical preparations (1957–) R—Laboratory assistance in drug control and in establishing specifications; and laboratory research in the establishment of chemical reference substances and quality control specifications for drugs.

SQP 004 (Interregional 0624) Courses on the quality control of drugs (1968–) VK—The fourth in the series of courses to train 20 to 25 staff employed by national authorities for the quality control of drugs (inspection of manufacturing establishments, administration of laboratory work) and officials concerned with the quality control aspects of drug production, was held in Copenhagen (13 May–8 June 1974).

ISB 001 (Interregional 0722) Course on the control of biological products, Mexico City (13 Oct.–2 Nov. 1974) R—The course on the control of biological products was attended by 12 participants from as many countries. Provided—the cost of attendance of participants and the services of a staff member to teach on the course.

ISB 002 (BSN 0004) Collaborative research on standardization of vaccines (1963–) R—To carry out studies and international collaborative assays for the standardization of bacterial vaccines and toxoids.

ISB 003 (BSN 0005) Collaborative research on properties of biological preparations and standardization of pharmacological substances (1960–) R—To carry out studies on (i) preparations of penicillin and other antibiotics and materials for the standardization of hormones and hormonal substances; (ii) the long-acting properties of penicillin preparations; and (iii) properties of certain biological preparations (including rabies, cholera and pertussis vaccines) for evaluation and testing for control purposes.

ISB 004 (BSN 0008) Collaborative research on standardization of antisera and antitoxins (1964–) R—To carry out research on the provision of standards for antisera and antitoxins, and studies on antivenins.

ISB 005 (BSN 0009) Collaborative research on biological assay techniques and working standards for biological substances (1962–) R—To carry out studies on various widely used biological preparations with a view to improvement of techniques of preparation and maintenance of materials and studies for the preparation of materials to serve as working standards for biological substances. Also to carry out studies of biological assay techniques for certain widely used biological preparations, and studies for the preparation of alpha and beta subunits of luteinizing hormone.

ISB 006 (BSN 0011) Collaborative research on standardization of diagnostic reagents (1967–) R—To carry out research for the provision of reference preparations or reagents for diagnosis and identification.

DEM 003 (DEM 0001) Assessment of drug consumption pattern (1973–) R—To carry out a study on the methodology for assessing drug requirements in connexion with governmental health planning.

DEM 004 (DEM 0002) Collaborative research on criteria for drug safety (1973–80) R—To carry out studies required for the formulation of principles for the evaluation of drug efficacy and safety.

DEM 005 (DEM 0003) Collaborative research on monitoring of adverse reactions to drugs (1967–) R—To carry out studies on the development of suitable methods for the systematic collection, recording and evaluation of data on adverse reactions to drugs; provide assistance to research in national and other centres for drug monitoring in Member States; and provide assistance in developing national drug monitoring systems.

DEM 006 (Interregional 0531) International monitoring of adverse reactions to drugs (1970–) R—To carry out the operational phase of an international system for monitoring adverse reactions to drugs, utilizing the reports on adverse reactions to drugs that are recorded in the national drug monitoring centres of several countries.

LAB 001 (HLS 0009, 0010 and 0012) Collaborative research on new laboratory technology (research and development) (1972–) R—To carry out research into new and simple methods of automation in clinical chemistry, haematology and microbiology.

LAB 003 (HLS 0005) International Committee on Laboratory Animals (1962–78) R—To carry out research in the care and breeding of laboratory animals and provide prototype animal strains.

LAB 005 Development of standards for medical laboratory diagnostic materials (1974–) VG (Several nongovernmental scientific organizations).

PPE 001 (Interregional 0234) Environmental health aspects of social and economic development programmes (ECA/WHO) (1964–74) R—WHO provided a sanitary engineer to assist the Economic Commission for Africa on the environmental health aspects of its economic and social development programmes. He collaborated in assessing conditions of basic sanitation in Africa, including housing, and in the organization and convening of meetings and training activities related to these.

BSM 001 (CWS 0011) Development of local materials and skills in planning, design, construction, operation and maintenance of urban water supplies (1973–) R—To support research or research-like activities that will produce an increased awareness of indigenous resources—both in men and material—and lead to an improvement in national capability in water supply engineering. (Examples of such studies are those on the use of bamboo pipes in water supply in both open-channel and pressurized applications, and of manually operated paddle pumps.)

BSM 002 (CWS 0012) Monitoring of deleterious substances in drinking-water (1973–74) R—This project, undertaken by the Water Research Centre (formerly the Water Research Association) in the United Kingdom, has resulted in the formulation of general procedures for monitoring the amounts of selected contaminants present in urban water supplies in different countries of the world, with a view to the initiation of an experimental monitoring programme based on these procedures.

BSM 004 (CWS 0016) Field research in environmental sanitation (1973–) R—To undertake a number of micro-scale studies of innovative methods for reducing the cost of elements forming part of a water supply or wastes disposal system. (Examples of such studies are those on field testing of different types of hand-pumps under differing conditions, and methods of night-soil treatment and disposal in small communities.)

BSM 006 (CWS 0018) Collaborative research on wastes reclamation (1973–75) R—To formulate criteria for the planning of processes for the reclamation of materials from liquid and solid waste streams, with specific attention to the health implications associated with the separation, processing and reuse of secondary materials.

BSM 025 (Interregional 0884) Planned prevention of health hazards in transitional settlements (1974–) UNEP—To undertake pre-planning and technical preparation leading to the elaboration of guidelines for the prevention of health hazards in transitional settlements.

BSM 026 (Interregional 0885) Minimum requirements for basic sanitary services in human settlements in developing countries (1974–) UNEP—To undertake pre-planning and technical preparation leading to the elaboration of guidelines on minimum requirements for basic sanitary services in human settlements in developing countries. The aim of the guidelines is to set out those sanitary conditions below which no human settlement should be

allowed to exist, and they are directed towards conditions in transitional settlements, poor rural settlements, slums or "fringe" areas, rather than to the wide needs of urban and rural planning.

BSM 027 (Interregional 0886) Development of environmental health criteria for planning of residential environment and housing (1974-) UNEP—To carry out pre-planning and technical preparation leading to the formulation of a long-term programme for the development of environmental health criteria for planning of residential environment and housing.

BSM 028 (Interregional 0887) Joint FAO/WHO food contamination monitoring programme (1974-75) UNEP—(1) To assess the levels of certain contaminants in foods and to determine whether any food presents special hazards with reference to its intake; to continue with the development of a well-defined internationally coordinated food contamination monitoring programme with clear priorities and a framework to assure comparability of data, data collection, review, evaluation and dissemination; (2) to reach an agreement with cooperating governments having on-going food contamination monitoring activities to participate in the programme and share appropriate data with the two agencies concerned and other bodies; (3) to provide assistance to governments of countries wishing to initiate or strengthen food contamination monitoring programmes.

CEP 001 (Interregional 0704) International Hydrological Programme (1970-74) R—WHO and UNESCO have jointly provided the technical secretariat for the meetings of a working group on water quality, established under the International Hydrological Decade Programme to prepare a guidebook for water quality surveys.

CEP 003 (Interregional 0813) Symposium on Environmental Health Planning and Management, Geneva (12-16 Aug. 1974) R—To discuss modern concepts and methods for the planning, administration and control of national environmental health programmes, and to review plans for the elaboration of guidelines on environmental health planning. The Symposium had 9 participants from 8 countries and was attended also by 2 representatives from the Environment and Housing Division of ECE. Provided—a consultant and the cost of attendance of participants.

CEP 004 (Interregional 0703) Scientific aspects of marine pollution (1971-) R—To participate in, and when required provide the technical secretariat for, a joint Group of Experts on the Scientific Aspects of Marine Pollution—an advisory panel of experts nominated by the sponsoring agencies (the United Nations, FAO, UNESCO, IMCO, WMO, IAEA and WHO).

The sixth session of the Group, which met at WHO headquarters, Geneva, from 22 to 28 March 1974, was concerned *inter alia* with harmful substances in the marine environment, the impact of oil on the marine environment, the specification of physical, chemical and biological parameters to be monitored, principles for developing coastal water criteria, and the selection of sites for the disposal of wastes into the sea. Provided—the technical secretariat and the services of 3 temporary advisers.

CEP 006 (Interregional 0814) Meeting on Effects on Health of Specific Air Pollutants from Industrial Emissions, Geneva (4-9 Nov. 1974) R—To review atmospheric emissions of selected industries, identify specific priority pollutants and review their health effects as well as the adequacy of the technology for their control. There were 12 participants from 11 countries and the meeting was also attended by representatives of ILO, WMO, and the Commission of the European Communities. Provided—2 temporary advisers and the cost of attendance of 11 participants.

CEP 011 (EPL 0012) Collaborative research on the epidemiology of coastal pollution (1973-77) R—To carry out studies to obtain more reliable information on the effects on human health of the microbiological and chemical pollution of coastal waters and beaches.

CEP 012 (EPL 0013) Collaborative research on environmental pollution (field studies) (1973-) R—To carry out studies to obtain more reliable information on the effects of environmental pollutants and hazards on health, on the levels of these hazards in different environmental media, and on measures for prevention and control of their adverse effects.

CEP 014 (EPL 0015) Collaborative research on laboratory methods for measuring biological responses to air pollutants (1974-) R—To promote improvement and comparability of laboratory methods for measuring biological responses of relevance to human health by research or evaluation of the existing methods.

CEP 019 (EPL 0011) Reference methods for determining levels of environmental pollutants (1973-77) R—To evaluate, develop and test the reference methods for measuring selected environmental pollutants.

CEP 035 (Interregional 0888) Water quality monitoring (1974-) UNEP—To develop a health-related global water quality monitoring system and to assist Member States in establishing national water pollution surveillance networks.

CEP 037 (Interregional 0870) Preparation of draft criteria documents (1974-) UNEP—To prepare critical reviews on the relationship between the exposure to and health effects of 16 priority environmental pollutants or potential pollutants.

A task group on environmental health aspects of selenium, tellurium and molybdenum, composed of representatives of UNEP, ILO, the Organization for Economic Cooperation and Development and the Commission of the European Communities, met in Geneva from 29 July to 2 August 1974. Provided—4 temporary advisers and the cost of attendance of 9 participants.

HWP 001 (Interregional 0715) Assistance to national occupational health programmes (1972-) R—To assist governments in planning and implementing occupational health programmes and in training national personnel.

HWP 003 (Interregional 0725) International Occupational Safety and Information Centre (1963-74) R (ILO)—WHO has provided financial support to the Centre, which is a unit of ILO and which compiles literature on occupational health and safety and prepares abstracts and publications in this field.

FSP 001 (Interregional 0365) Joint FAO/WHO Food Standards Programme (1963-) R—To protect the health of the consumer and ensure fair practices in the food trade; to coordinate work on food standardization by intergovernmental and nongovernmental organizations; and to assist in elaborating, publishing and revising such standards.

FSP 003 (FAD 0003) Collaborative research on toxicity of organomercurial compounds (1973-) R—To carry out studies for determining the relationship between the frequency and nature of signs and symptoms and the intake of methylmercury in man. The information collected is intended to improve the knowledge of the dose-response relationship of methylmercury in man and to facilitate the establishment of an intake of acceptable risk with greater accuracy.

FSP 006 (FAD 0002) Collaborative research on toxicity of food additives and safety of irradiated food (1972-) R—To stimulate research on food additives and irradiated food in order better to assess the health risks and ensure food safety.

FSP 008 (FAD 0007) Collection of information on chemical residues in food (1972-) R—To determine the levels of a number of heavy metals and persistent pesticides in human fat and tissues, to inquire into occupational exposure, and to relate the levels found in the body to exposure factors.

DSI 001 (Interregional 1021) Study of levels, trends and differentials in fetal, infant and early childhood mortality (1970-75) UNFPA (UN)—To carry out, jointly with the United Nations, an investigation into levels, trends and differentials in fetal, infant and early childhood mortality. The investigation includes comparative studies of social and biological effects on perinatal and infant mortality.

In connexion with the study on infant mortality, a meeting to establish a detailed protocol was held in Geneva from 10 to 14 June 1974 with participants from 5 countries.

DSI 002 (Interregional 1022) Ad hoc survey on fetal, infant and early childhood mortality and fertility patterns (1970-78) UNFPA—To provide estimates of levels and trends and differentials of fetal, infant and early childhood mortality in relation to fertility patterns and to test statistical methods and techniques suitable for carrying out the survey in selected countries.

DSI 003 (Interregional 1040) Training for national health statisticians in family planning programmes (1971-75) UNFPA—To familiarize statisticians in key positions with statistical methods for the study of health and population; to determine the principal statistical issues involved in the planning, execution and evaluation of family health programmes; and to provide up-to-date information on developments in statistical methodology.

Following the workshops organized under this project in earlier years, a training seminar on family planning statistics was held in Dar es Salaam (21 Oct.-1 Nov. 1974) for 10 English-speaking health statisticians and administrators from 9 countries of the African Region. Provided—the cost of attendance of participants.

DSI 004 (Interregional 1065) Promotion of collection, appraisal, utilization and dissemination of family planning statistics (1971-77) UNFPA—To test statistical methods and techniques for the collection, appraisal and analysis of quantitative information required in the planning, operation and evaluation of family planning programmes; to determine the needs for information in the various phases of programmes; to study the design of standard forms for data collection; and to investigate problems involved in the "feedback" of statistical information for policy decisions.

DSI 005 (Interregional 1066) Studies on mortality trends and differentials (1972-74) UNFPA—To study urban-rural mortality differentials in communities at various stages of socioeconomic development on the basis of available national data; to stimulate and support such studies in selected countries where the data are not readily available; and to promote investigations of the underlying causes of the observed differentials in various countries.

Research into trends and sex/age patterns of mortality in relation to causes of death was started on a contractual service basis. This research forms the basis for projections of mortality by age, sex and cause, to be carried out by WHO.

An evaluation of national mortality projections in developing countries for the period 1950-70 was carried out and published in the *World Health Statistics Report*.

DSI 008 (Interregional 1155) Study of the influence of changing mortality on the life cycle of the family (1972-74) UNFPA—To investigate the influence of changing mortality at various stages in the development of the family in countries with relatively high mortality; and to compare this influence with other factors such as nuptiality and divorce so as to assess its relative importance.

The manuscript of the study has been completed. The study, together with a glossary of terms for health studies of the family, will serve as background documentation for a study group on statistical indices, planned for 1975.

DSI 011 (Interregional 1163) Research on the interrelationships between health, population and socioeconomic development (1973-) UNFPA—To study population characteristics, apart from age and sex, that affect health and mortality, including such variables as occupation, housing, nutritional habits, ethnic origins and physical environment.

A meeting was held in Lima from 11 to 20 February 1974 on health trends and future prospects in relation to population and development, in order to forecast prospective health trends and their implications. There were 21 participants from 20 countries, and representatives of the United Nations and PAHO staff members also attended.

DHS 001 (Interregional 0594) Travelling Seminar on the Planning and Management of National Health Statistical Information Systems and their Use, Hungary and Netherlands (27 May-15 June 1974) R—To enable the participants—senior health statisticians and health administrators—to familiarize themselves with the organization and operation of national health statistical services at various levels of health administration, and to discuss the role that statistics play in some specialized fields of the health services. Econometric studies and health environment statistics were selected as 2 special fields for study during the Seminar. There were 15 participants from 13 countries and a number of observers. Provided—2 consultants, the cost of attendance of 10 participants, and the services of staff members.

DHS 007 (Interregional 1047) Series of health demographic manuals (1970-74) UNFPA—To provide manuals for use in schools of public health and for training activities of WHO in collaboration with ECA and ESCAP.

Project Interregional 1047, Manual on fertility analysis, was merged with Interregional 1048, Manual on morbidity and mortality analysis, in the compilation of this series, which also includes a Manual on family planning statistics. The series is to be published in 1975.

ICD 001 (Interregional 0690) Centres for classification of diseases, London (1967-), Moscow (1971-), Paris (1971-) R—To advise countries on problems arising out of the use of the International Classification of Diseases and assist WHO in its periodic revisions of the Classification. Each centre works in its own language of reference.

ICD 002 (Interregional 0726) Coordination of activities for classification of diseases (1971-) R—To ensure that the Ninth Revision of the International Classification of Diseases in English, French, Russian and Spanish will adequately reflect current medical usage in each language, through consultations between the heads of the language-oriented centres for classification of diseases.

ICD 003 (Interregional 0801) Revision of the International Classification of Diseases (1972-) VD—To ensure that the Ninth Revision of the International Classification of Diseases will be suitable for new applications, such as the planning and evaluation of health care delivery systems, without detriment to its traditional use in morbidity and mortality statistics.

ICD 004 (Interregional 1023) Registration of pregnancies and their outcome (1970–) UNFPA—To establish a registry of pregnancies and assess the various outcomes of these, namely early fetal death corresponding to abortion, in addition to the usually recorded late fetal death and live birth.

For work done under this project between 1970 and 1973, see the Annual Report for 1973.¹ During the period under review, the final report analysing the data from participating centres was in preparation.

ICD 005 (Interregional 1151) Methodology for reporting and analysis of perinatal care and maternal morbidity and mortality (1971–) UNFPA—(i) To carry out studies with a view to establishing internationally acceptable criteria, definitions, classifications and nomenclature both for morbidity and causes of death and for the medical procedures—preventive, therapeutic and diagnostic—related to the perinatal period; (ii) to propose a methodology for the registration of pregnancies; (iii) to propose a methodology for the collection and analysis of information on child and mother (with special reference to multiple causes of illness and death) in countries with a high doctor/population ratio and those with a low one; (iv) to propose a statistical

methodology for measuring the survival probability of the immature fetus; (v) to carry out studies on the multifactorial causation of mortality as related to population dynamics; and (vi) to set up a collaborating centre for reference to advise on and assist the above activities.

At a Scientific Group held in Geneva from 30 April to 6 May 1974, recommendations were formulated concerning definitions, terminology and statistical analysis relative to the perinatal period and to maternal mortality. The Group also recommended a special form of medical certificate of cause of death for use in perinatal deaths.

Also during the period under review, field trials of a methodology for lay reporting of perinatal and maternal morbidity and mortality were carried out in several African and Asian countries.

Interregional 0498 Joint FAO/WHO Training Course for Meat Inspectors, Athi River, Kenya : tenth course (7 Jan.–6 June 1974); eleventh course (15 July–14 Dec. 1974) VK (FAO)—To train personnel from African countries in the hygienic handling and inspection of meat. In addition to covering national and international aspects of meat control, the courses touched upon meat transport and trade, veterinary administration and animal diseases. WHO participated in the preparation of the courses and nominated 5 fellows for the eleventh course.

¹ *Off. Rec. Wld Hlth Org.*, 1974, No. 213, p. 287.

ANNEXES

Annex 1

MEMBERS AND ASSOCIATE MEMBERS OF THE WORLD HEALTH ORGANIZATION

at 31 December 1974

At 31 December 1974 the World Health Organization had 141 Member States and three Associate Members. They are listed below with the date on which each became a party to the Constitution or the date of admission to associate membership.

Afghanistan	19 April 1948	Guinea *	19 May 1959	Poland *	6 May 1948
Albania	26 May 1947	Guinea-Bissau	29 July 1974	Portugal	13 February 1948
Algeria *	8 November 1962	Guyana	27 September 1966	Qatar	11 May 1972
Argentina *	22 October 1948	Haiti *	12 August 1947	Republic of Korea	17 August 1949
Australia *	2 February 1948	Honduras	8 April 1949	Romania *	8 June 1948
Austria *	30 June 1947	Hungary *	17 June 1948	Rwanda *	7 November 1962
Bahamas	1 April 1974	Iceland	17 June 1948	Saudi Arabia	26 May 1947
Bahrain	2 November 1971	India *	12 January 1948	Senegal *	31 October 1960
Bangladesh	19 May 1972	Indonesia *	23 May 1950	Sierra Leone *	20 October 1961
Barbados *	25 April 1967	Iran	23 November 1946	Singapore *	25 February 1966
Belgium *	25 June 1948	Iraq *	23 September 1947	Somalia	26 January 1961
Bolivia	23 December 1949	Ireland *	20 October 1947	South Africa	7 August 1947
Brazil *	2 June 1948	Israel	21 June 1949	Spain *	28 May 1951
Bulgaria *	9 June 1948	Italy *	11 April 1947	Sri Lanka	7 July 1948
Burma	1 July 1948	Ivory Coast *	28 October 1960	Sudan	14 May 1956
Burundi	22 October 1962	Jamaica *	21 March 1963	Swaziland	16 April 1973
Byelorussian SSR	7 April 1948	Japan *	16 May 1951	Sweden *	28 August 1947
Canada *	29 August 1946	Jordan *	7 April 1947	Switzerland	26 March 1947
Central African Republic *	20 September 1960	Kenya *	27 January 1964	Syrian Arab Republic	18 December 1946
Chad	1 January 1961	Khmer Republic *	17 May 1950	Thailand *	26 September 1947
Chile *	15 October 1948	Kuwait *	9 May 1960	Togo *	13 May 1960
China	22 July 1946	Laos *	17 May 1950	Trinidad and Tobago *	3 January 1963
Colombia	14 May 1959	Lebanon	19 January 1949	Tunisia *	14 May 1956
Congo	26 October 1960	Lesotho *	7 July 1967	Turkey	2 January 1948
Costa Rica	17 March 1949	Liberia	14 March 1947	Uganda	7 March 1963
Cuba *	9 May 1950	Libyan Arab Republic *	16 May 1952	Ukrainian SSR	3 April 1948
Cyprus *	16 January 1961	Luxembourg *	3 June 1949	Union of Soviet Socialist Republics *	24 March 1948
Czechoslovakia *	1 March 1948	Madagascar *	16 January 1961	United Arab Emirates .	30 March 1972
Dahomey	20 September 1960	Malawi *	9 April 1965	United Kingdom of Great Britain and Northern Ireland * ..	22 July 1946
Democratic People's Republic of Korea ..	19 May 1973	Malaysia *	24 April 1958	United Republic of Cameroon	6 May 1960
Democratic Yemen ...	6 May 1968	Maldives *	5 November 1965	United Republic of Tanzania *	15 March 1962
Denmark *	19 April 1948	Mali *	17 October 1960	United States of America	21 June 1948
Dominican Republic ..	21 June 1948	Malta *	1 February 1965	Upper Volta *	4 October 1960
Ecuador *	1 March 1949	Mauritania	7 March 1961	Uruguay	22 April 1949
Egypt *	16 December 1947	Mauritius *	9 December 1968	Venezuela	7 July 1948
El Salvador	22 June 1948	Mexico	7 April 1948	Viet-Nam	17 May 1950
Ethiopia	11 April 1947	Monaco	8 July 1948	Western Samoa	16 May 1962
Fiji	1 January 1972	Mongolia *	18 April 1962	Yemen	20 November 1953
Finland *	7 October 1947	Morocco *	14 May 1956	Yugoslavia *	19 November 1947
France	16 June 1948	Nepal *	2 September 1953	Zaire *	24 February 1961
Gabon	21 November 1960	Netherlands *	25 April 1947	Zambia	2 February 1965
Gambia *	26 April 1971	New Zealand *	10 December 1946		
German Democratic Republic *	8 May 1973	Nicaragua *	24 April 1950		
Germany, Federal Republic of *	29 May 1951	Niger *	5 October 1960		
Ghana *	8 April 1957	Nigeria *	25 November 1960		
Greece	12 March 1948	Norway *	18 August 1947		
Grenada	4 December 1974	Oman	28 May 1971		
Guatemala *	26 August 1949	Pakistan *	23 June 1948		
		Panama	20 February 1951		
		Paraguay	4 January 1949		
		Peru	11 November 1949		
		Philippines *	9 July 1948		
				<i>Associate Members</i>	
				Namibia	16 May 1974
				Papua New Guinea ...	26 July 1972
				Southern Rhodesia ¹ ..	16 May 1950

* Member States that have acceded to the Convention on the Privileges and Immunities of the Specialized Agencies and its Annex VII.

¹ Southern Rhodesia's associate membership is regarded as in suspense.

Annex 2

MEMBERSHIP OF THE EXECUTIVE BOARD

1. Fifty-third Session (Geneva, 15-25 January 1974)

	<i>Designated by</i>		<i>Designated by</i>
Dr Esther AMMUNDSEN	Denmark	Professor L. VON MANGER-KOENIG	Federal Republic of Germany
Dr T. BANA, <i>Vice-Chairman</i>	Niger	Dr J. L. MOLAPO ¹	Lesotho
Dr CHEN Hai-feng	China	Professor A. POUYAN	Iran
Dr N. M. CHITIMBA	Malawi	Dr N. RAMZI, <i>Chairman</i>	Syrian Arab Republic
Dr S. P. EHRLICH, Jr	United States of America	Professor J. J. A. REID	United Kingdom of Great Britain and Northern Ireland
Dr C. HEMACHUDHA	Thailand	Dr G. RESTREPO CHAVARRIAGA	Colombia
Dr M. U. HENRY, <i>Rapporteur</i>	Trinidad and Tobago	Dr J. SARALEGUI PADRÓN	Uruguay
Professor A. M. KHOSHBEEN, <i>Rapporteur</i>	Afghanistan	Dr A. SAUTER	Switzerland
Professor J. KOSTRZEWSKI	Poland	Professor Julie SULIANTI SAROSO	Indonesia
Dr R. LEKIE	Zaire	Dr C. N. D. TAYLOR, <i>Vice-Chairman</i>	New Zealand
Dr A. A. MAISARI ¹	Democratic Yemen	Professor J. TIGYI	Hungary
Dr R. MALDONADO MEJÍA ²	Ecuador	Professor R. VANNUGLI	Italy

2. Fifty-fourth session (Geneva, 27-28 May 1974)

The Twenty-seventh World Health Assembly in resolution WHA27.12 elected Argentina, France, Guatemala, Jordan, Mauritius, Sri Lanka, Union of Soviet Socialist Republics, and Venezuela to designate persons to serve on the Board in place of the retiring members—designated by Denmark, Ecuador, Italy, Lesotho, Syrian Arab Republic, Thailand, Trinidad and Tobago, and Uruguay. This resulted in the following composition of the Board at the fifty-fourth session:

	<i>Designated by</i>	<i>Unexpired term of office at the time of closure of the Twenty-seventh World Health Assembly</i>
Professor E. J. AUJALEU	France	3 years
Professor M. I. AZIM	Afghanistan	1 year
Dr T. BANA	Niger	1 year
Dr A. A. BUKAIR	Democratic Yemen	2 years
Dr CHEN Hai-feng ³	China	2 years
Dr N. M. CHITIMBA	Malawi	2 years
Dr S. P. EHRLICH, Jr	United States of America	2 years
Dr A. A. GARCÍA, <i>Vice-Chairman</i>	Argentina	3 years
Dr F. KILANI	Jordan	3 years
Professor J. KOSTRZEWSKI	Poland	2 years
Dr R. LEKIE, <i>Rapporteur</i>	Zaire	1 year
Professor L. VON MANGER-KOENIG	Federal Republic of Germany	2 years
Professor A. POUYAN ⁴	Iran	2 years
Professor J. J. A. REID	United Kingdom of Great Britain and Northern Ireland	1 year
Dr G. RESTREPO CHAVARRIAGA ⁵	Colombia	1 year
Dr A. SAUTER	Switzerland	2 years
Professor Julie SULIANTI SAROSO	Indonesia	1 year
Dr C. N. D. TAYLOR, <i>Chairman</i>	New Zealand	1 year
Professor J. TIGYI, <i>Vice-Chairman</i>	Hungary	1 year
Dr R. VALLADARES	Venezuela	3 years
Dr D. D. VENEDIKTOV ⁶	Union of Soviet Socialist Republics	3 years
Sir Harold WALTER	Mauritius	3 years
Dr C. E. S. WEERATUNGE, <i>Rapporteur</i>	Sri Lanka	3 years
Dr R. ZECEÑA FLORES	Guatemala	3 years

¹ Unable to attend.

² Dr H. Játiva Ortiz, alternate, attended the session.

³ Mr Wang Chung-li, alternate, attended the session.

⁴ Dr A. Diba, alternate, attended the session.

⁵ Dr Luz Uribe Naranjo, alternate, attended the session.

⁶ Dr O. P. Ščepin, alternate, attended the session.

Annex 3

ORGANIZATIONAL AND RELATED MEETINGS IN 1974

Executive Board, fifty-third session: Standing Committee on Administration and Finance	Geneva, 7-14 January
Executive Board, fifty-third session	Geneva, 15-25 January
Executive Board, fifty-third session: Standing Committee on Nongovernmental Organizations	Geneva, 22 January
World Health Assembly: Special Committee of Experts to study the health conditions of the inhabitants of the occupied territories in the Middle East	Geneva and Eastern Mediterranean Area, 22 April-13 May; 12-23 August
Executive Board: Ad Hoc Committee to consider the Reports of the External Auditor on the Accounts of the Organization for the year 1973	Geneva, 6-7 May
Twenty-seventh World Health Assembly	Geneva, 7-23 May
Executive Board, fifty-fourth session	Geneva, 27-28 May
Regional Committee for the Western Pacific, twenty-fifth session	Kuala Lumpur, 2-9 September
Regional Committee for South-East Asia, twenty-seventh session	Denpasar (Bali, Indonesia), 3-9 September
Regional Committee for Africa, twenty-fourth session	Brazzaville, 4-11 September
Regional Committee for the Eastern Mediterranean: Subcommittee A	Alexandria, 10-13 September
Regional Committee for Europe, twenty-fourth session	Bucharest, 10-14 September
Regional Committee for the Americas, twenty-sixth session/XIX Pan American Sanitary Conference	Washington, D.C., 30 September-11 October

Annex 4

EXPERT ADVISORY PANELS AND MEETINGS OF COMMITTEES AND SCIENTIFIC GROUPS IN 1974

1. EXPERT ADVISORY PANELS

The expert advisory panels in existence at 31 December 1974 were on the following subjects:

Air pollution	Health of seafarers	Nursing
Antibiotics	Health statistics	Nutrition
Bacterial diseases	Human genetics	Occupational health
Biological standardization	Human reproduction	Organization of medical care
Brucellosis	Immunology	Parasitic diseases
Cancer	Insecticides	Professional and technical education of medical and auxiliary personnel
Cardiovascular diseases	International pharmacopoeia and pharmaceutical preparations	Public health administration
Chronic degenerative diseases	International surveillance of communicable diseases	Rabies
Dental health	Leprosy	Radiation
Drug dependence	Malaria	Rehabilitation
Drug evaluation	Maternal and child health	Trachoma
Environmental health	Medical research ¹	Tuberculosis
Food additives and contaminants	Mental health	Venereal infections and treponematoses
Food hygiene	Neurosciences	Virus diseases
Health education		Zoonoses
Health laboratory services		

¹ See resolution WHA12.17.

2. MEETINGS OF COMMITTEES AND SCIENTIFIC GROUPS IN 1974

Expert Committees

Expert Committee on Services for Cardiovascular Emergencies	Geneva, 22-30 April
Expert Committee on Health Statistics (International Classification of Diseases)	Geneva, 4-10 June
Joint FAO/WHO Expert Committee on Food Additives ¹	Rome, 4-13 June
Expert Committee on Community Health Nursing ²	Geneva, 30 July-5 August
Expert Committee on Insecticides (Ecology and Control of Vectors in Public Health)	Geneva, 7-11 October
Expert Committee on Organization of Mental Health Services in Developing Countries	Geneva, 22-28 October
Expert Committee on Specifications for Pharmaceutical Preparations	Geneva, 4-9 November
Expert Committee on the Evaluation of Family Planning in Health Services	Geneva, 18-22 November
Joint FAO/WHO Expert Committee on Veterinary Public Health	Geneva, 25 November-2 December
Expert Committee on Biological Standardization	Geneva, 26 November-2 December
Joint Meeting of the FAO Working Party of Experts on Pesticide Residues and the WHO Expert Committee on Pesticide Residues	Rome, 2-11 December
Expert Committee on Smoking and its Effects on Health	Geneva, 9-14 December
Joint FAO/WHO Expert Committee on Nutrition	Rome, 11-20 December

Committee on International Surveillance of Communicable Diseases

Eighteenth meeting	Geneva, 4-8 February
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Advisory Committee on Medical Research

Sixteenth session	Geneva, 17-21 June
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Scientific Groups

Scientific Group on Health Statistics Methodology related to Perinatal Events	Geneva, 30 April-6 May
Scientific Group on Chemical and Biochemical Methodology for the Assessment of Hazards of Pesticides for Man	Geneva, 17-23 September
Scientific Group on Guidelines for Evaluation of Drugs for Use in Man	Geneva, 14-19 October
Scientific Group on Progress in Methodology of Evaluation of Dependence-liability of Drugs	Geneva, 4-9 November
Scientific Group on Advances in Methods of Fertility Regulation	Geneva, 9-13 December

¹ Report published as *Wld Hlth Org. techn. Rep. Ser.*, 1974, No. 557.

² Report published as *Wld Hlth Org. techn. Rep. Ser.*, 1974, No. 558.

Annex 5

WHO COLLABORATING CENTRES

The institutions that served as designated WHO Collaborating Centres (see paragraph 12.7) during 1974 are listed under the headings shown below. Asterisks denote those designated during the year. Figures in parentheses indicate the number of collaborating centres designated within the same institute.

Air pollution	Genetics, human	Respiratory virus diseases other than influenza
Antibiotics	Immunology	Rheumatic diseases
Arbovirus diseases	Influenza	Rickettsioses
Biological standardization	Leishmaniasis	Schistosomiasis
Blood groups	Leprosy	Serum reference banks
Brucellosis	Leptospirosis	Smallpox
Cancer	Malaria	Staphylococcal infections
Cardiovascular diseases	Meningococcal infections	Statistics (Classification of diseases)
Cell cultures	Mental health	Strengthening of health services
Chemical reference substances	Mycoplasmas	Streptococcal infections
Comparative medicine	Nutritional anaemias	Toxoplasmosis
Dental health	Occupational health	Trachoma and other chlamydial infections
Diphtheria	Pertussis	Trypanosomiasis
Education	Plague	Tuberculosis
Enteric infections, bacterial	Pseudotuberculosis	Vector biology and control
Enterovirus diseases	Rabies	Venereal infections and treponematoses
Environmental planning and services	Radiation	Virus diseases, general
Filariasis	Renal diseases	Wastes disposal
Food additives	Reproduction, human	Water quality
Food contaminants		Water supply

Air Pollution

Air Pollution Control Service, SURSAN Institute of Sanitary Engineering, Rio de Janeiro, Brazil

Institute of Hygiene and Epidemiology, Prague, Czechoslovakia

Institute of Occupational Health, Helsinki, Finland

Centre de Recherches sur la Pollution atmosphérique, Institut national de la Santé et de la Recherche médicale, Le Vésinet, Yvelines, France

Regional Institute for Air Pollution and Land Use Control of North Rhine-Westphalia, Essen, Federal Republic of Germany

Industrial Hygiene Section, Labour Department, Hong Kong

National Environmental Engineering Research Institute, Nagpur, India

Division of Air Pollution and Radiation Control, Ministry of Health, Tel Aviv, Israel

Laboratory of Air Pollution, Institute of Analytical Chemistry, University of Rome, Italy

Department of Community Environmental Sciences, Institute of Public Health, Tokyo, Japan

Air Pollution Division, Research Institute for Public Health Engineering, Delft, Netherlands

Research Laboratory of the National Environmental Protection Board, Solna, Stockholm, Sweden

Department of Community Hygiene, Central Institute for Advanced Medical Studies, Ministry of Health of the USSR, Moscow, USSR

Medical Research Council's Air Pollution Research Unit, Medical College, Royal Hospital of St Bartholomew, London, United Kingdom

Air Pollution Control Office, National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, N.C., USA

Institute of Medical Research and Industrial Hygiene, Zagreb, Yugoslavia

Antibiotics

Laboratoire de Bactériologie et de Parasitologie, University of Liège, Belgium

Arbovirus Diseases

- Department of Virology, Queensland Institute of Medical Research, Brisbane, Australia
- Arbovirus Laboratory, Adolfo Lutz Institute, São Paulo, Brazil
- Institute of Virology, Bratislava, Czechoslovakia
- Laboratoire des Arbovirus, Institut Pasteur, Paris, France
- Virus Research Centre, Indian Council of Medical Research, Poona, India
- Department of Virology and Rickettsiology, National Institute of Health, Tokyo, Japan
- Institut Pasteur, Dakar, Senegal
- East African Virus Research Institute, East African Common Services Organization, Entebbe, Uganda
- Department of Arboviruses, Institute of Poliomyelitis and Viral Encephalitis, Moscow, USSR
- Department of Arboviruses, Ivanovskij Institute of Virology, Moscow, USSR
- Vector-Borne Diseases Branch, Center for Disease Control, Fort Collins, Colo., USA
- Department of Epidemiology and Public Health, Yale University School of Medicine, New Haven, Conn., USA

Biological Standardization

- Biologics Control Laboratories, Laboratory Center for Disease Control, Department of National Health and Welfare, Ottawa, Ont., Canada
- State Institute for Drug Control, Ministry of Health, Prague, Czechoslovakia
- Statens Seruminstitut, Copenhagen, Denmark (2)
- Second Department of Bacteriology, National Institute of Health, Tokyo, Japan
- Laboratory of Biological Standards, National Institute of Public Health, Utrecht, Netherlands
- * Tarasevič State Control Institute for Medical Biological Preparations, Ministry of Health of the USSR, Moscow, USSR
- National Institute for Biological Standards and Control, London, United Kingdom (2)
- * Haematology Department and National Reference Laboratory for Anticoagulant Control Reagents, Withington Hospital, University Hospital of South Manchester, Manchester, United Kingdom
- Central Veterinary Laboratory, Ministry of Agriculture, Fisheries and Food, Weybridge, United Kingdom ¹
- * Bacteriology Section, Microbiology Branch, Center for Disease Control, Atlanta, Ga., USA
- * Bureau of Biologics, Food and Drug Administration, Rockville, Md., USA
- Institute of Immunology, Zagreb, Yugoslavia

Blood Groups

- Medical Research Council's Blood Group Reference Laboratory, London, United Kingdom

Brucellosis

- Commonwealth Serum Laboratories, Parkville, Victoria, Australia ¹
- State Veterinary Serum Laboratory, Copenhagen, Denmark ¹
- Institut de Biologie, Montpellier, France ¹
- Veterinary Microbiological Institute, Athens, Greece ¹
- Indian Veterinary Research Institute, Mukteswar-Kumaon, Uttar Pradesh, India ¹
- Institute of Hygiene, Faculty of Medicine, University of Florence, Italy ¹
- National Institute of Animal Health, Tokyo, Japan ¹
- Medical Research Institute, General Hospital, Mexico City, Mexico ¹
- Institut Pasteur, Tunis, Tunisia ¹
- Institute of Veterinary Bacteriology and Serology, Istanbul, Turkey ¹
- Gamaleja Institute of Epidemiology and Microbiology, Moscow, USSR
- Central Veterinary Laboratory, Ministry of Agriculture, Fisheries and Food, Weybridge, United Kingdom ¹
- Department of Medicine, University of Minnesota Medical School, Minneapolis, Minn., USA ¹

Cancer

- Latin American Registry of Bone Pathology, Osteo-articular Pathology Centre, Italian Hospital, Buenos Aires, Argentina
- Pathology Department, University of Western Australia, Perth, Australia
- Department of Oral Pathology, Royal Dental College, Copenhagen, Denmark (2)
- Royal Veterinary and Agricultural College, Copenhagen, Denmark
- Institute of Pathology, Municipal Hospital, Copenhagen, Denmark
- Department of General Neurology, Max-Planck Institute for Brain Research, Cologne, Federal Republic of Germany
- Institute of Veterinary Pathology, University of Giessen, Federal Republic of Germany
- Institut de Cancérologie et d'Immunogénétique, Hôpital Paul-Brousse, Villejuif, Val-de-Marne, France
- Institut Gustave Roussy, Villejuif, Val-de-Marne, France
- Department of Pathology, Queen Mary Hospital, University of Hong Kong, Hong Kong
- Sarojini Najdu Medical College, Agra, Uttar Pradesh, India
- National Institute for the Study and Treatment of Tumours, Milan, Italy
- National Cancer Centre Hospital, Tokyo, Japan
- * Tokyo Metropolitan Institute of Gerontology, Tokyo, Japan
- Netherlands Cancer Institute, Amsterdam, Netherlands ² (2)
- Pathological Department, University of Amsterdam, Netherlands
- Institute of General and Experimental Pathology, University of Oslo, Norway
- Department of Pathology, Faculty of Medicine, University of Singapore, Singapore

¹ In collaboration with FAO.

² In collaboration with IARC.

Research Unit of Tumour Immunology, Karolinska Institute, Stockholm, Sweden ¹

Centre de Cytologie et de Dépistage du Cancer, Geneva, Switzerland

University Institute of Pathology, Cantonal Hospital, Zurich, Switzerland

Institute of Veterinary Pathology, University of Zurich, Switzerland

Department of Pathological Anatomy, Faculty of Veterinary Medicine, Ankara University, Turkey

N. N. Petrov Research Institute of Oncology, Leningrad, USSR (2)

Department of Pathology, Institute of Experimental and Clinical Oncology, Academy of Medical Sciences of the USSR, Moscow, USSR

Department of Pathology, Welsh National School of Medicine, Cardiff, United Kingdom

Department of Veterinary Pathology, Royal (Dick) School of Veterinary Studies, University of Edinburgh, United Kingdom

Veterinary School, University of Glasgow, United Kingdom

Bland Sutton Institute of Pathology, Middlesex Hospital, London, United Kingdom (2)

Research Department, St Mark's Hospital, London, United Kingdom

Department of Animal Diseases, College of Agriculture and Natural Resources, University of Connecticut, Storrs, Conn., USA

Armed Forces Institute of Pathology, Washington, D.C., USA (5)

Cardiovascular Diseases

Clinic of Tropical and Infectious Diseases, Faculty of Medicine, Federal University of Bahia, Brazil

Department of Pathology, Ribeirão Preto Faculty of Medicine, University of São Paulo, Brazil

* Laboratory Centre for Disease Control, Department of National Health and Welfare, Ottawa, Ontario, Canada

Division of Cardiovascular Research, Institute of Clinical and Experimental Medicine, Prague, Czechoslovakia (2)

Second Department of Pathology, School of Medicine, Charles University, Prague, Czechoslovakia

* Department of Medicine and Therapeutics, Ghana Medical School, Accra, Ghana

* Department of Medicine, Hungarian Institute of Cardiology, Budapest, Hungary

Division of Streptococcal Studies, Institute of Public Health Research, University of Teheran, Iran

Department of Medical Ecology, Hadassah Medical School, Jerusalem, Israel

Department of Pathology, Faculty of Medicine, University of the West Indies, Kingston, Jamaica

Medical Research Council's Epidemiological Research Unit (Jamaica), University of the West Indies, Kingston, Jamaica

Epidemiology Unit, Wellington Hospital, Wellington, New Zealand

Laboratory of Environmental Physiology, Norwegian Research Council for Humanities and Sciences, Oslo, Norway

Cardiovascular Laboratory, High Altitude Research Institute, Peruvian University of Medical and Biological Sciences, Lima, Peru

* First Medical Clinic, Sahlgren's Hospital, Faculty of Medicine, Göteborg University, Sweden

Department of Pathology, General Hospital, Malmö, Sweden

Centre de Cardiologie, Hôpital cantonal, Geneva, Switzerland

Makerere University Faculty of Medicine, Kampala, Uganda

Laboratory for Lipid Metabolism, Institute of Experimental Medicine, Leningrad, USSR

Laboratory of Cardiovascular Epidemiology, Mjasnikov Institute of Cardiology, Moscow, USSR

Department of Cardiology, Royal Infirmary, University of Edinburgh, United Kingdom

Medical Research Council's Social Medicine Research Unit, London School of Hygiene and Tropical Medicine, London, United Kingdom

Lipid Standardization Laboratory, Medical Laboratory Section, Center for Disease Control, Atlanta, Ga., USA

Department of Epidemiology, School of Public Health, University of Michigan, Ann Arbor, Mich., USA

Laboratory of Physiological Hygiene, School of Public Health, University of Minnesota, Minneapolis, Minn., USA

* Medical Service, School of Medicine, Washington University, St. Louis, Mo., USA

Cardiovascular Diseases Division, Ministry of Health and Social Welfare, Caracas, Venezuela

Cell Cultures

American Type Culture Collection, Rockville, Md., USA

Chemical Reference Substances

Centre for Authentic Chemical Substances, Apotekens Central-laboratorium Apoteksbolaget AB, Solna, Stockholm, Sweden

Comparative Medicine ²

College of Veterinary Medicine, Hanover, Federal Republic of Germany

* Department of Veterinary Sciences, National Institute of Health, Tokyo, Japan

Institute of Comparative Neurology, Faculty of Veterinary Medicine, University of Berne, Switzerland

Nuffield Institute of Comparative Medicine, Zoological Society of London, London, United Kingdom

* Animal Resources Branch, Division of Research Facilities and Resources, National Institutes of Health, Bethesda, Md., USA

Department of Microbiology, New York State Veterinary College, Cornell University, Ithaca, N.Y., USA

School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa., USA

Division of Microbiology and Infectious Diseases, Southwest Foundation for Research and Education, San Antonio, Tex., USA

¹ In collaboration with IARC.

² See also under Cancer and Cardiovascular Diseases.

Dental Health

- * Moscow Central Research Institute of Stomatology, Ministry of Health of the USSR, Moscow, USSR

Diphtheria

- * Dr I. Cantacuzino Institute of Microbiology, Parasitology and Epidemiology, Bucharest, Romania

Education

- Centre for Health Sciences, Ben Gurion University of the Negev, Beersheba, Israel
- * Institute of Research on Education and Examination Procedures, Faculty of Medicine, University of Berne, Switzerland
- Central Institute for Advanced Medical Studies, Ministry of Health of the USSR, Moscow, USSR
- Centre for Individual Learning Materials in Medical Education, Department of Audio-Visual Communication, British Medical Association, London, United Kingdom
- Center for Educational Development, University of Illinois College of Medicine, Chicago, Ill., USA

Enteric Infections, Bacterial

- Statens Seruminstitut, Copenhagen, Denmark
- Institut Pasteur, Paris, France
- Department of Vaccines, "Human" Institute for Serobacteriological Production and Research, Budapest, Hungary
- Cholera Research Centre, Calcutta, India
- Central Public Health Laboratory, London, United Kingdom (2)
- Center for Disease Control, Atlanta, Ga., USA
- Institute of Immunology, Zagreb, Yugoslavia

Enterovirus Diseases

- Enteroviruses Department, Statens Seruminstitut, Copenhagen, Denmark
- Section de Virologie, Laboratoire national de la Santé publique, Lyons, France
- Department of Enteroviruses, National Institute of Health, Tokyo, Japan
- Department of Bacteriology, University of Singapore, Singapore
- Institute of Poliomyelitis and Viral Encephalitis, Moscow, USSR
- Center for Disease Control, Atlanta, Ga., USA
- Department of Virology and Epidemiology, Baylor University College of Medicine, Houston, Tex., USA

Environmental Planning and Services

- * Swedish Water and Air Pollution Research Laboratory, Stockholm, Sweden

Filariasis

- Department of Medical Helminthology, London School of Hygiene and Tropical Medicine, London, United Kingdom

Food Additives

- Max von Pettenkofer Institute, Berlin ¹
- Food Advisory Bureau, Food and Drug Directorate, Department of National Health and Welfare, Ottawa, Ont., Canada ¹
- Laboratory of Chemical Food Analysis, National Institute of Public Health, Utrecht, Netherlands ¹
- Institute of Experimental Pathology and Toxicology, Albany Medical College, Union University, Albany, N.Y., USA
- Division of Colors and Cosmetics Technology, Food and Drug Administration, Department of Health, Education, and Welfare, Washington, D.C., USA ¹

Food Contaminants

- World Life Research Institute, Colton, Calif., USA ¹

Genetics, Human

- Department of Haematology, Chaim Sheba Medical Centre, Tel Hashomer, Israel
- Sub-Department of Haematology, University College Hospital, Ibadan, Nigeria
- Medical Research Council's Abnormal Haemoglobin Research Unit, University of Cambridge, United Kingdom
- Population Genetics Laboratory, School of Medicine, University of Hawaii, Honolulu, Hawaii, USA
- Zoology Department, University of Texas, Austin, Tex., USA
- Department of Medicine, University of Washington, Seattle, Wash., USA

Immunology

- Walter and Eliza Hall Institute of Medical Research, Melbourne University, Victoria, Australia (3)
- Instituto Butantan, São Paulo, Brazil
- * Division of Clinical Immunology and Allergy, Montreal General Hospital, Montreal, Canada
- Department of Immunology, Institute of Microbiology, Prague, Czechoslovakia
- Centre départemental de Transfusion sanguine et de Génétique humaine, Bois-Guillaume, Seine-Maritime, France
- * Laboratoire d'Immunochimie, Institut de Recherches scientifiques sur le Cancer, Centre national de la Recherche scientifique, Villejuif, Val-de-Marne, France
- Department of Biochemistry, All India Institute of Medical Sciences, Indian Council of Medical Research, New Delhi, India
- Department of Chemical Immunology and Cell Biology, Weizmann Institute of Science, Rehovot, Israel
- * Department of Biochemistry, Faculty of Medicine, Hokkaido University, Sapporo, Japan
- Faculty of Medicine, University of Nairobi, Kenya
- School of Medicine, American University of Beirut, Lebanon
- Children's Hospital of Mexico, Mexico City, Mexico
- Department of Chemical Pathology, University College Hospital, Ibadan, Nigeria

¹ In collaboration with FAO.

Faculty of Medicine, University of Singapore, Singapore
 Department of Medical Microbiology, University of Lund, Sweden
 Basle Institute of Immunology, Basle, Switzerland
 Institut de Biochimie, University of Lausanne, Switzerland (3)
 Gamaleja Institute of Epidemiology and Microbiology, Moscow, USSR (3)
 * Chester Beatty Research Institute, Institute of Cancer Research, Royal Cancer Hospital, London, United Kingdom
 Department of Immunology, Middlesex Hospital Medical School, London, United Kingdom
 Medical Research Council's Experimental Haematology Research Unit, St Mary's Hospital Medical School, London, United Kingdom
 * Department of Immunology, City of Hope National Medical Center, Duarte, Cal., USA
 National Cancer Institute, National Institutes of Health, Bethesda, Md., USA (2)
 Center for Immunology, School of Medicine, State University of New York at Buffalo, N.Y., USA
 * Roswell Park Memorial Institute, New York State Department of Health, Buffalo, N.Y., USA
 Department of Biology, Western Reserve University, Cleveland, Ohio, USA

Influenza

National Institute for Medical Research, London, United Kingdom
 Center for Disease Control, Atlanta, Ga., USA

Leishmaniasis

Department of Parasitology, Hadassah Medical School, Jerusalem, Israel

Leprosy

Laboratoire de Bactériologie et de Virologie, Institut de Médecine tropicale Prince Léopold, Antwerp, Belgium
 Ecole de Santé publique, Université Catholique de Louvain, Brussels, Belgium (2)
 Department of Microbiology and Immunology, Ribeirão Preto Faculty of Medicine, University of São Paulo, Brazil
 Institute of Microbiology and Hygiene, University of Montreal, Canada
 Medical Historical Museum, University of Copenhagen, Denmark
 Armauer Hansen Research Institute, Addis Ababa, Ethiopia
 Ernst Rodenwaldt Institute of Experimental Medicine and Hygiene, Koblenz, Federal Republic of Germany
 Municipal Bacteriology Laboratory, Aurora Hospital, Helsinki, Finland
 Laboratory of Serology, National Institute for Leprosy Research, Tokyo, Japan
 Division of Bacteriology and Virus Research, National Institute for Medical Research, London, United Kingdom
 Center for Disease Control, Atlanta, Ga., USA
 Laboratory Research Branch, US Public Health Service Hospital, Carville, La., USA

Department of Biochemistry, Atchafalaya Basin Laboratories, Gulf South Research Institute, New Iberia, La., USA
 Leonard Wood Memorial Laboratory for Leprosy Research, Johns Hopkins University, Baltimore, Md., USA
 Division of Dermatology, Ministry of Health and Social Welfare, Caracas, Venezuela

Leptospirosis

Laboratory of Microbiology and Pathology, State Health Department, Brisbane, Australia ¹
 * Department of Epidemiology, Faculty of Medicine, Komensky University, Bratislava, Czechoslovakia
 * Laboratoire de la Leptospirose, Institut Pasteur, Paris, France
 Israel Institute for Biological Research, Tel Aviv University Medical School, Ness-Ziona, Israel ¹
 Istituto Superiore di Sanità, Rome, Italy ¹
 National Institute of Health, Tokyo, Japan ¹
 Institute for Tropical Hygiene (Royal Tropical Institute), Amsterdam, Netherlands ¹
 Gamaleja Institute of Epidemiology and Microbiology, Moscow, USSR
 London School of Hygiene and Tropical Medicine, London, United Kingdom ¹

Malaria

Department of Biology, Memorial University of Newfoundland, St. John's, Newfoundland, Canada
 National Institute of Communicable Diseases, New Delhi, India
 Institute of Parasitology, Faculty of Medicine and Surgery, University of Rome, Italy
 Laboratory of Medical Parasitology, Faculty of Medicine, Catholic University, Nijmegen, Netherlands
 Department of Parasitology, Liverpool School of Tropical Medicine, Liverpool, United Kingdom
 Nuffield Institute of Comparative Medicine, Zoological Society of London, London, United Kingdom
 Laboratory of Parasite Chemotherapy, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, Md., USA

Meningococcal Infections

Laboratoire de Recherche de Microbiologie, Ecole de Spécialisation du Service de Santé pour l'Armée de Terre et Institut de Pathologie exotique, Marseille, France

Mental Health

Clinic of Psychiatry and Neurology, Faculty of Medicine, University of Vienna, Austria
 Clinique psychiatrique, Faculté de Médecine, University of Liège, Belgium
 * Department of Neurology and Neurosurgery, Montreal Neurological Institute, McGill University, Montreal, Canada
 Division of Psychopharmacology, Department of Psychiatry, McGill University, Montreal, Canada

¹ In collaboration with FAO.

Behman Hospital, Helwan, Egypt

* Service d'Exploration fonctionnelle du Système nerveux, Faculté mixte de Médecine et de Pharmacie de Marseille, Université d'Aix-Marseille, Marseille, France

Centre psychiatrique Sainte-Anne, Paris, France

* Centre de Neurochimie, Centre national de la Recherche scientifique, Strasbourg, France

Department of Psychiatry, University of Ghana Medical School, Accra, Ghana

Psychiatric Department, Seth G.S. Medical College, Bombay, India

Institute of Clinical Psychiatry, University of Milan, Italy

Faculty of Medicine, Hokkaido University, Sapporo, Japan

Department of Neurobiology, Institute of Biomedical Investigations, National Autonomous University of Mexico, Mexico City, Mexico

* National Institute of Neurology, Mexico City, Mexico

Department of Psychiatry and Neurology, Faculty of Medicine, University of Ibadan, Nigeria (2)

Department of Psychiatry, Aasgaard Hospital, Tromsø, Norway

Clinique neuro-psychiatrique, Faculté mixte de Médecine et de Pharmacie, University of Dakar, Senegal

Laboratory for Clinical Stress Research, Karolinska Institute, Stockholm, Sweden

Psychiatric Clinic, Faculty of Medicine, University of Basle, Switzerland

National Institute of Mental Health, Rockville, Md., USA

Department of Neurology and Psychiatry, School of Medicine, University of Zagreb, Yugoslavia

Mycoplasmas

Institute of Medical Microbiology, University of Aarhus Medical Faculty, Denmark ¹

Laboratory for Mycoplasmas, Gamaleja Institute of Epidemiology and Microbiology, Moscow, USSR

Laboratory of Infectious Diseases, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, Md., USA

Nutritional Anaemias

Department of Pathology, Medical College, Royal Hospital of St Bartholomew, London, United Kingdom

School of Medicine, University of Washington, Seattle, Wash., USA

Venezuelan Institute for Scientific Research, Caracas, Venezuela

Occupational Health

Division of Occupational Health and Pollution Control, New South Wales Department of Public Health, Lidcombe, Australia

Institute of Hygiene, Industrial Safety and Occupational Diseases, Centre of Hygiene, Information and Documentation Unit, Department of Environmental Health, Sofia, Bulgaria

Institute of Occupational Health and Air Pollution, Santiago, Chile

Department of Occupational Health, High Institute of Public Health, University of Alexandria, Egypt

Institute of Occupational Health, Helsinki, Finland

Department of Manpower, National Institute of Occupational Health and Industrial Hygiene, Jakarta, Indonesia

Department of Public Health, Faculty of Medicine, Kurume University, Japan

Institute of Industrial Medicine, Catholic Industrial Medical Centre, Seoul, Republic of Korea

Health Centre for Seafarers, Gdynia, Poland

Occupational Health Division, Ministry of Health, Khartoum, Sudan

Occupational Health Centre, Ministry of Public Health, Samuth-prakarn, Thailand

TUC Centenary Institute of Occupational Health, London School of Hygiene and Tropical Medicine, London, United Kingdom

Pertussis

Department of Diphtheria-Pertussis-Tetanus Vaccine, Gamaleja Institute of Epidemiology and Microbiology, Moscow, USSR

Plague

Antiplague Research Institute of the Caucasus and Transcaucasia, Stavropol, USSR

Pseudotuberculosis

* Unité Peste et Germes, Institut Pasteur, Paris, France

Rabies

Institut Pasteur, Paris, France

Pasteur Institute of Southern India, Coonoor, India

Rabies Section, Institut Pasteur, Teheran, Iran

Institute of Poliomyelitis and Viral Encephalitis, Moscow, USSR

Wistar Institute of Anatomy and Biology, Philadelphia, Pa., USA

Center for Disease Control, Atlanta, Ga., USA

Radiation

Laboratory for Dosimetry, National Atomic Energy Commission, Buenos Aires, Argentina ²

Human Cytogenetics Division, Environmental Health Centre, Department of National Health and Welfare, Ottawa, Ont., Canada

Radiation Protection Division, Department of National Health and Welfare, Ottawa, Ont., Canada

Service central de Protection contre les Rayonnements ionisants, Le Vésinet, Yvelines, France

Institute of Nuclear Medicine, German Centre for Cancer Research, Heidelberg, Federal Republic of Germany ²

Radiation Medicine Centre, Bhabha Atomic Research Centre, Trombay, Bombay, India ²

Radiotherapy Department, Faculty of Medicine, Pahlavi Hospital, University of Teheran, Iran ²

¹ In collaboration with FAO.

² In collaboration with IAEA.

Department of Radiotherapy, Institute of Oncology, National Medical Centre of the Mexican Social Security Institute, General Hospital, Mexico City, Mexico ¹

Department of Nuclear Medicine, Central Hospital of 20 November, Mexico City, Mexico ¹

National Radiation Laboratory, Department of Health, Wellington, New Zealand

* National Research Institute for Mother and Child, Ministry of Health and Social Welfare, Warsaw, Poland

Radiation Hygiene Laboratory, Institute of Hygiene, Bucharest, Romania ¹

Radiotherapy Department, Outram Road General Hospital, Singapore ¹

National Institute of Radiation Protection, Stockholm, Sweden

Department of Medical Sciences, Ministry of Public Health, Bangkok, Thailand ¹

Institute of Medical Genetics, Academy of Medical Sciences of the USSR, Moscow, USSR

Clinical Population Cytogenetics Research Unit, Medical Research Council, Edinburgh, United Kingdom

* Bureau of Radiological Health, Food and Drug Administration, Department of Health, Education, and Welfare, Rockville, Md., USA

National Environmental Research Center, Environmental Protection Agency, Las Vegas, N. Mex., USA

Renal Diseases

* Department of Pathology, Mount Sinai Hospital School of Medicine, City University of New York, N.Y., USA

Reproduction, Human

Latin American Institute of the Physiology of Reproduction, Faculty of Medicine, University of Salvador, Buenos Aires, Argentina

Department of Obstetrics and Gynaecology, Queen Elizabeth II Research Institute for Mothers and Infants, University of Sydney, Australia

Clinique de Gynécologie et d'Obstétrique et Laboratoire de Gynécologie expérimentale, Hôpital universitaire Saint-Pierre, Free University of Brussels, Belgium

Department of Gynaecological Endocrinology, Faculty of Medicine, Free University of Berlin

Obstetrics Clinic, Climerio de Oliveira Maternity Hospital, Faculty of Medicine, Federal University of Bahia, Brazil

* Canadian Committee for Fertility Research, Montreal, Canada

Gynaecology and Obstetrics Unit, Barros Luco-Trudeau Hospital, Santiago, Chile

Shatby Maternity Hospital, Faculty of Medicine, Alexandria University, Egypt

Department of Obstetrics and Gynaecology, Medical School, University of Szeged, Hungary

Department of Obstetrics and Gynaecology, and Pharmacology and Preventive Medicine, Seth G.S. Medical College, University of Bombay and Institute for Research in Reproduction, Indian Council of Medical Research, Bombay, India

Department of Obstetrics and Gynaecology, Postgraduate Institute of Medical Education and Research, Chandigarh, Punjab, India

Department of Human Reproduction, All India Institute of Medical Sciences, Indian Council of Medical Research, New Delhi, India

Gandhigram Institute of Rural Health and Family Planning, Gandhigram, Madurai District, Tamil Nadu, India

Institute of Endocrinology, Chaim Sheba Medical Centre, Tel Hashomer, Israel

* Institute of Reproductive Medicine and Population, College of Medicine, Seoul National University, Seoul, Republic of Korea

Research Division, Department of Reproductive Biology, National Institute of Nutrition, Mexico City, Mexico

Department of Obstetrics and Gynaecology, Academic Hospital, University of Utrecht, Netherlands

Department of Obstetrics and Gynaecology, Faculty of Medicine, University of Ibadan, Nigeria

Reproductive Biology Centre, Department of Obstetrics and Gynaecology, College of Medicine, University of the Philippines, Manila, Philippines

Department of Obstetrics and Gynaecology, Kandang Kerbau Hospital for Women, University of Singapore, Singapore

Reproductive Endocrinology Research Unit, Karolinska Institute, Stockholm, Sweden

Family Planning Research Unit, Department of Obstetrics and Gynaecology, Siriraj Hospital, Mahidol University, Bangkok, Thailand

All-Union Scientific Research Institute of Obstetrics and Gynaecology, Ministry of Health of the USSR, Moscow, USSR

* Department of Obstetrics and Gynaecology, King's College Hospital Medical School, London, United Kingdom

Department of Obstetrics and Gynaecology, Women's Hospital, University of Southern California Medical Center, Los Angeles, Calif., USA

Population Epidemiology Unit and Carolina Population Center, University of North Carolina, Chapel Hill, N.C., USA

Laboratory of Reproductive Pharmacology, New York Medical College, New York, N.Y., USA

Family Planning Institute, University Clinical Hospital, University of Ljubljana, Yugoslavia

Respiratory Virus Diseases other than Influenza

Fairfield Hospital Communicable Disease Centre, Melbourne, Victoria, Australia

Department of Epidemiology and Microbiology, Institute of Hygiene and Epidemiology, Prague, Czechoslovakia

Respiratory Virus Laboratory, National Institute of Health, Tokyo, Japan

Ivanovskij Institute of Virology, Moscow, USSR

Common Cold Research Unit, National Institute for Medical Research, Harvard Hospital, Salisbury, Wilts., United Kingdom

Center for Disease Control, Atlanta, Ga., USA

Laboratory of Infectious Diseases, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, Md., USA

¹ In collaboration with IAEA.

Rheumatic Diseases

Hôpital Cochin, Paris, France

Rheumatology Service, Medical Clinic, Faculty of Medicine,
University of Barcelona, Spain

Institute of Rheumatology, Academy of Medical Sciences of the
USSR, Moscow, USSR

Connective Tissue Division, Johns Hopkins University School
of Medicine, Baltimore, Md., USA

Medical Clinic, Faculty of Medicine, University of the Republic,
Montevideo, Uruguay

Rickettsioses

Department of Rickettsiae, Institute of Virology, Bratislava,
Czechoslovakia

Rocky Mountain Laboratory, National Institute of Allergy and
Infectious Diseases, Hamilton, Mont., USA

Schistosomiasis

Danish Bilharziasis Laboratory, Copenhagen, Denmark

Serum Reference Banks

Institute of Hygiene and Epidemiology, Prague, Czechoslovakia
National Institute of Health, Tokyo, Japan

Department of Epidemiology and Public Health, Yale University
School of Medicine, New Haven, Conn., USA

Smallpox

Connaught Medical Research Laboratories, University of
Toronto, Ont., Canada

Section des Virus, Laboratoire national de la Santé publique,
Paris, France

Department of Enteroviruses, National Institute of Health,
Tokyo, Japan

Virus and Rickettsial Diseases Laboratory, National Institute
of Public Health, Utrecht, Netherlands

Laboratory of Smallpox Prophylaxis, Research Institute of Virus
Preparations, Moscow, USSR

Department of Virology, Wright-Fleming Institute of Micro-
biology, St Mary's Hospital Medical School, University of
London, United Kingdom

Department of Microbiology, University of Reading, United
Kingdom

Center for Disease Control, Atlanta, Ga., USA

Staphylococcal Infections

Central Public Health Laboratory, London, United Kingdom

Statistics (Classification of Diseases)

Section Information sur la Santé publique, Institut national de
la Santé et de la Recherche médicale, Boulogne-sur-Seine,
France

Department of Public Health Statistics, Semaško Institute of
Social Hygiene and Public Health Administration, Moscow,
USSR

Office of Population Censuses and Surveys, Somerset House,
London, United Kingdom

Latin American Centre for Classification of Diseases, Centro
Simón Bolívar, Caracas, Venezuela

Strengthening of Health Services

Institute of Public Health Research, School of Public Health,
University of Teheran, Iran

Centre for Health Sciences, Ben Gurion University of the Negev,
Beersheba, Israel

Streptococcal Infections

Streptococcus Reference Laboratory, Institute of Hygiene and
Epidemiology, Prague, Czechoslovakia

Toxoplasmosis

* Department of Toxoplasmosis and Viral Diseases, Statens
Seruminstitut, Copenhagen, Denmark ¹

Trachoma and other Chlamydial Infections

Ornithosis Department, Statens Seruminstitut, Copenhagen,
Denmark

Francis I. Proctor Foundation for Research in Ophthalmology,
University of California Medical Center, San Francisco, Calif.,
USA

Trypanosomiasis

* National Institute of Rural Endemic Diseases, Belo Horizonte,
Brazil

East African Trypanosomiasis Research Organization, Tororo,
Uganda

* Department of Medical Protozoology, London School of
Hygiene and Tropical Medicine, London, United Kingdom

Tuberculosis

Second Tuberculosis Clinic, Medical Faculty, Charles University,
Prague, Czechoslovakia

Department of Tuberculosis Microbiology, Institute of Hygiene
and Epidemiology, Prague, Czechoslovakia

BCG Department, Statens Seruminstitut, Copenhagen, Denmark

Department of Tuberculosis, National Institute of Health,
Tokyo, Japan

National Tuberculosis Institute, El Algodonal, Caracas, Vene-
zuela

Vector Biology and Control ²

Research Unit on Vector Pathology, Faculty of Arts and
Sciences, Memorial University of Newfoundland, St John's,
Newfoundland, Canada

Institute of Parasitology, Prague, Czechoslovakia

Danish Pest Infestation Laboratory, Lyngby, Denmark

United States Naval Medical Research Unit No. 3, Cairo, Egypt

Station de Recherches cytopathologiques, Faculté des Sciences,
University of Montpellier, France

¹ In collaboration with FAO.

² See also Malaria.

Institute of Genetics, Johannes Gutenberg University, Mainz, Federal Republic of Germany

Institute of Zoology, University of Pavia, Italy

Laboratory for Research on Insecticides, Wageningen, Netherlands

Gamaleja Institute of Epidemiology and Microbiology, Moscow, USSR

Toxicology Research Unit, Medical Research Council Laboratories, Carshalton, Surrey, United Kingdom

Department of Entomology, London School of Hygiene and Tropical Medicine, London, United Kingdom

Ross Institute of Tropical Hygiene, London, United Kingdom

Tropical Pesticides Research Unit, Porton Down, Salisbury, Wilts., United Kingdom

Department of Entomology, University of California, Riverside, Calif., USA

Entomological Research Division, United States Department of Agriculture, Agricultural Research Service, Gainesville, Fla., USA

Center for Disease Control, Savannah, Ga., USA

Department of Entomology, College of Liberal Arts and Sciences, University of Illinois, Urbana, Ill., USA

Department of Biology, University of Notre Dame, Ind., USA

Gulf Coast Mosquito Research Laboratory, United States Department of Agriculture, Lake Charles, La., USA

Department of Zoology, University of Maryland, College Park, Md., USA

Department of Zoology and Entomology, Ohio State University, Columbus, Ohio, USA

Mission entomologique, Centre Muraz, Bobo Dioulasso, Upper Volta

Department of Toxicology, Institute of Medical Research, Yugoslav Academy of Sciences and Arts, Zagreb, Yugoslavia

Venereal Infections and Treponematoses

Venereal Diseases Reference Laboratory, Institute of Clinical Pathology and Medical Research, New South Wales Department of Public Health, Lidcombe, Australia

Statens Seruminstitut, Copenhagen, Denmark (2)

Institut Alfred-Fournier, Paris, France

* Bacteriology Section, Department of Pathology, Outram Road General Hospital, Singapore

Center for Disease Control, Atlanta, Ga., USA

Johns Hopkins University, Baltimore, Md., USA

Virus Diseases, General ¹

Virus Laboratories, Laboratory Center for Disease Control, Department of National Health and Welfare, Ottawa, Ont., Canada

Department of Virology, National Institute of Public Health, Budapest, Hungary

Department of Microbiology, University of the West Indies, Mona, Kingston, Jamaica

Department of Medical Microbiology, Faculty of Medicine, University of Ibadan, Nigeria

Stefan S. Nicolau Institute of Virology, Bucharest, Romania

Institute of Bacteriology, St Gall, Switzerland

Trinidad Regional Virus Laboratory, Port of Spain, Trinidad and Tobago

Gamaleja Institute of Epidemiology and Microbiology, Moscow, USSR

Central Public Health Laboratory, London, United Kingdom (2)

Division of Bacteriology and Virus Research, Medical Research Council's National Institute for Medical Research, London, United Kingdom

* London School of Hygiene and Tropical Medicine, London, United Kingdom

Department of Virology, Andrija Štampar School of Public Health, University of Zagreb, Yugoslavia

Wastes Disposal

Institute of Sanitary Engineering, Faculty of Engineering, University of Buenos Aires, Argentina

Water Science Laboratories, Melbourne Water Science Institute Ltd, Carlton, Victoria, Australia

Institute for Water Supply, Sewage Purification and Water Pollution Control, Vienna Technical University, Austria

Centre belge d'Etude et de Documentation des Eaux, Liège, Belgium

Central Office for Wastes Disposal, Berlin

SURSAN Institute of Sanitary Engineering, Rio de Janeiro, Brazil

Department of Environment Health, School of Public Health, University of São Paulo, Brazil

Institute of Hygiene, Industrial Safety and Occupational Diseases, Centre of Hygiene, Information and Documentation Unit, Department of Environmental Health, Sofia, Bulgaria

Water Research Institute, Bratislava, Czechoslovakia

Sanitary Engineering Department, Faculty of Engineering, University of Alexandria, Egypt

Institut de Recherches hydrologiques, Nancy, France

Centre d'Etudes et Recherches des Charbonnages de France, Paris, France

Institut national de Recherche chimique appliquée, Vert-le-Petit, Essonne, France

Faculty of Engineering, University of Science and Technology, Kumasi, Ghana

Research Institute for Water Resources Development, Budapest, Hungary

National Environmental Engineering Research Institute, Nagpur, India

Institute of Public Health Research and School of Public Health, University of Teheran, Iran

Sanitary Engineering Laboratories, Israel Institute of Technology, Haifa, Israel

Environmental Health Laboratory, Hadassah Medical School, Jerusalem, Israel

Institute of Sanitary Engineering, Milan Polytechnic, Milan, Italy

Centre for Study and Research in Sanitary Engineering, University of Naples, Italy

¹ See also Arbovirus diseases, Enterovirus diseases, Influenza, Respiratory virus diseases other than influenza, and Smallpox.

Japan Environmental Sanitation Centre, Kawasaki City, Japan
 Department of Civil Engineering, Faculty of Engineering,
 University of Nairobi, Kenya
 Faculty of Engineering and Architecture, and School of Public
 Health, American University of Beirut, Lebanon
 Foundation for Waste Disposal, Amersfoort, Netherlands
 Government Institute of Sewage Purification, Voorburg,
 Netherlands
 Works Division, Auckland Regional Authority, Auckland, New
 Zealand
 Faculty of Engineering, University of Lagos, Nigeria
 Department of Civil Engineering, Ahmadu Bello University,
 Zaria, Nigeria
 Department of Sanitary Engineering and Environmental Pol-
 lution, National Institute of Public Health, Oslo, Norway
 Norwegian Institute for Water Research, Royal Norwegian
 Council for Scientific and Industrial Research, Oslo, Norway
 Department of Sanitation, National University of Engineering,
 Lima, Peru
 Pan American Centre for Sanitary Engineering and Environ-
 mental Sciences, Lima, Peru
 National Institute for Water Research, Council for Scientific
 and Industrial Research, Pretoria, South Africa
 Battelle Geneva Research Centre, Geneva, Switzerland
 Federal Institute for Water Resources and Water Pollution
 Control, Dübendorf, Zurich, Switzerland
 Division of Environmental Engineering, Asian Institute of
 Technology, Bangkok, Thailand
 Environmental Engineering Department, Middle East Technical
 University, Ankara, Turkey
 Academy of Community Services, Moscow, USSR
 Water Pollution Research Laboratory, Stevenage, Herts.,
 United Kingdom
 American Public Works Association, Chicago, Ill., USA
 Office of Solid Waste Management Programs, Environmental
 Protection Agency, Rockville, Md., USA
 Department of Environmental Sciences and Engineering, School
 of Public Health, University of North Carolina, Chapel Hill,
 N.C., USA
 National Environmental Research Center, Environmental
 Protection Agency, Cincinnati, Ohio, USA
 Center for Research in Water Resources, Balcones Research
 Center, University of Texas, Austin, Tex., USA
 Faculté polytechnique, National University of Zaire, Kinshasa,
 Zaire

Water Quality

* Canada Centre for Inland Waters, Burlington, Ont., Canada

Water Supply

Institut d'Hygiène et d'Epidémiologie, Ministère de la Santé
 publique, Brussels, Belgium
 SURSAN Institute of Sanitary Engineering, Rio de Janeiro, Brazil
 Institute of Hygiene and Epidemiology, Prague, Czechoslovakia
 Institute of Hygiene, University of Aarhus, Denmark

Sanitary Engineering Department, Faculty of Engineering,
 University of Alexandria, Egypt
 Section d'Hydrologie, Office de la Recherche scientifique et
 technique outre-mer, Paris, France
 Department of Civil Engineering, Faculty of Engineering, Uni-
 versity of Science and Technology, Kumasi, Ghana
 Victoria Jubilee Technical Institute, Matunga, Bombay, India
 All India Institute of Hygiene and Public Health, Calcutta, India
 National Environmental Engineering Research Institute, Nagpur,
 India
 Institute of Hydro-Sciences and Water Resources Technology,
 University of Teheran, Iran
 Environmental Health Laboratory, Hadassah Medical School,
 Jerusalem, Israel
 Centre for Study and Research in Sanitary Engineering, Uni-
 versity of Naples, Italy
 Institute of Water Research, National Research Council, Rome,
 Italy
 Department of Sanitary Engineering, Faculty of Engineering,
 University of Tokyo, Japan
 Department of Civil Engineering, Faculty of Engineering,
 University of Nairobi, Kenya
 Faculty of Engineering and Architecture, and School of Public
 Health, American University of Beirut, Lebanon
 Chemical and Bacteriological Department, Institute for Water
 Supply, The Hague, Netherlands
 Institute for Control of Waterpipe Material, Rijswijk, Nether-
 lands
 Faculty of Engineering, University of Lagos, Nigeria
 Department of Sanitation, National University of Engineering,
 Lima, Peru
 Pan American Centre for Sanitary Engineering and Environ-
 mental Sciences, Lima, Peru
 Faculty of Engineering and Architecture, University of Khar-
 toum, Sudan
 Battelle Geneva Research Centre, Geneva, Switzerland
 Division of Environmental Engineering, Asian Institute of
 Technology, Bangkok, Thailand
 Environmental Engineering Department, Middle East Technical
 University, Ankara, Turkey
 Academy of Community Services, Moscow, USSR
 Water Research Association, Medmenham, Marlow, Bucks.,
 United Kingdom
 Department of Civil Engineering, University of Newcastle upon
 Tyne, United Kingdom
 Department of Environmental Engineering, College of Engineer-
 ing, University of Florida, Gainesville, Fla., USA
 Division of Water Hygiene, Water Quality Office, Environmental
 Protection Agency, Rockville, Md., USA
 National Sanitation Foundation, Ann Arbor, Mich., USA
 Department of Environmental Sciences and Engineering, School
 of Public Health, University of North Carolina, Chapel Hill,
 N.C., USA
 Department of Sanitary Engineering, Faculty of Engineering,
 Central University of Venezuela, Caracas, Venezuela

Annex 6

**RESEARCH GRANTS AWARDED FOR TRAINING AND EXCHANGE IN 1974,
BY SUBJECT AND TYPE OF GRANT**

Subject	Training grants	Grants for exchange of research workers	Total
Bacterial diseases (other than leprosy and tuberculosis) .	2	1	3
Cancer	2	2	4
Cardiovascular diseases	—	2	2
Human genetics	2	4	6
Human reproduction	26	11	37
Immunology	2	1	3
Leprosy	—	1	1
Malaria and other parasitic diseases	1	3	4
Maternal and child health	—	1	1
Mental health	2	5	7
Nutrition	—	3	3
Prophylactic and therapeutic substances	1	—	1
Strengthening of health services	—	2	2
Vector biology and control	1	1	2
Venereal diseases and treponematoses	—	1	1
Veterinary public health	2	3	5
Virus diseases	2	3	5
TOTAL ¹	43	44	87

¹ In addition, three research grants were supported by the Swedish National Association against Heart and Chest Diseases.

Annex 7

**FELLOWSHIPS AWARDED, BY SUBJECT OF STUDY AND BY REGION,
1 December 1973 - 30 November 1974**

Subject of Study	Region						Total
	Africa	The Americas	South-East Asia	Europe	Eastern Mediterranean	Western Pacific	
Health Organization and Services							
PUBLIC HEALTH ADMINISTRATION							
Public health administration	67	94	50	39	37	18	305
Hospital and medical care administration . .	8	24	3	8	20	9	72
Construction of health institutions	—	8	—	—	—	1	9
Medical librarianship	—	5	3	—	1	—	9
Subtotal — Public Health Administration	75	131	56	47	58	28	395
ENVIRONMENTAL HEALTH							
Environmental sanitation	55	96	61	92	42	34	380
Housing and town planning	1	—	—	—	—	—	1
Food control	2	17	7	12	5	7	50
Subtotal — Environmental Health	58	113	68	104	47	41	431
NURSING							
Nursing and midwifery	50	20	35	12	39	26	182
Public health nursing	57	5	3	—	8	15	88
Medical social work	3	2	—	—	—	1	6
Subtotal — Nursing	110	27	38	12	47	42	276
MATERNAL AND CHILD HEALTH							
Maternal and child health	9	106	56	31	20	16	238
Paediatrics and obstetrics	16	38	40	9	20	10	133
Subtotal — Maternal and Child Health	25	144	96	40	40	26	371
OTHER HEALTH SERVICES							
Mental health	7	15	15	38	16	7	98
Health education	31	13	33	6	3	4	90
Occupational health	12	4	8	21	12	9	66
Nutrition	7	60	19	1	15	9	111
Health statistics	4	25	6	18	33	3	89
Dental health	9	32	15	11	7	33	107
Rehabilitation	8	28	27	6	23	5	97
Control of pharmaceutical and biological preparations	7	11	20	9	16	16	79
Subtotal — Other Health Services	85	188	143	110	125	86	737
TOTAL — HEALTH ORGANIZATION AND SERVICES	353	603	401	313	317	223	2 210
<i>Percentage</i>	58	65	61	73	47	53	60

Annex 7 (continued)

Subject of Study	Region						Total
	Africa	The Americas	South-East Asia	Europe	Eastern Mediterranean	Western Pacific	
Communicable Diseases							
Malaria	55	8	21	1	22	57	164
Venereal diseases and treponematoses	—	12	3	—	4	1	20
Tuberculosis	2	25	22	6	9	18	82
Other communicable diseases	20	67	53	8	34	23	205
Laboratory services	70	52	40	17	70	27	276
Chemotherapy, antibiotics	1	—	1	—	—	—	2
TOTAL — COMMUNICABLE DISEASES	148	164	140	32	139	126	749
<i>Percentage</i>	25	18	21	8	20	30	20
Clinical Medicine, Basic Medical Sciences and Medical and Allied Education							
CLINICAL MEDICINE							
Surgery and medicine	6	6	9	9	21	4	55
Anaesthesiology	2	1	3	14	12	11	43
Radiology	20	2	12	—	25	12	71
Haematology	1	1	2	6	6	4	20
Other medical and surgical specialties	5	6	24	34	25	11	105
Subtotal — Clinical Medicine	34	16	50	63	89	42	294
BASIC MEDICAL SCIENCES AND MEDICAL AND ALLIED EDUCATION							
Basic medical sciences	24	7	35	13	35	10	124
Medical and allied education	1	136	28	6	6	6	183
Undergraduate medical studies	46	—	4	—	89	13	152
Subtotal — Basic Medical Sciences and Medical and Allied Education	71	143	67	19	130	29	459
TOTAL — CLINICAL MEDICINE, BASIC MEDICAL SCIENCES AND MEDICAL AND ALLIED EDUCATION	105	159	117	82	219	71	753
<i>Percentage</i>	17	17	18	19	33	17	20
GRAND TOTAL	606	926	658	427	675	420	3 712

Annex 8

PUBLICATIONS ISSUED IN 1974¹

MONOGRAPH SERIES

- 23 *Laboratory Techniques in Rabies*, edited by M. M. Kaplan & H. Koprowki, third edition (F)
- 61 *Handbook on Human Nutritional Requirements*, by R. Passmore, B. M. Nicol, M. Narayana Rao, in collaboration with G. H. Beaton & E. M. Demayer (E, F)

PUBLIC HEALTH PAPERS

- 49 *Interrelationships between Health Programmes and Socio-economic Development* (R)
- 50 *Hospital Legislation and Hospital Systems*, by R. F. Bridgman & M. I. Roemer (S)
- 51 *Health Practice Research and Formalized Managerial Methods*, by F. Grundy & W. A. Reinke (S)
- 52 *Development of Educational Programmes for the Health Professions* (F, S)
- 53 *Family Planning in the Education of Nurses and Midwives*, edited by Lily M. Turnbull & Helena Pizurki (F, S)
- 54 *Control of Air Pollution in the USSR*, by N. F. Izmerov (F, S)
- 55 *Modern Management Methods and the Organization of Health Services* (E, F, S)
- 56 *The Training and Utilization of Feldshers in the USSR* (E, F)
- 57 *The Teaching of Human Sexuality in Schools for Health Professionals*, by D. R. Mace, R. H. O. Bannermann & J. Burton (E, F)
- 58 *Suicide and Attempted Suicide*, edited by Eileen M. Brooke (E)
- 59 *Administration of Environmental Health Programmes. A System View*, by Morris Schaeffer (E)
- 60 *The Medical Assistant: An Intermediate Level of Health Care Personnel*, edited by D. M. Pitcairn & D. Flahault (E)

TECHNICAL REPORT SERIES

- 467 *WHO Expert Committee on Malaria*, fifteenth report (R)
- 469 *Cerebrovascular Diseases: Prevention, Treatment, and Rehabilitation*, report of a WHO Meeting (R)
- 485 *Human Development and Public Health*, report of a WHO Scientific Group (R)
- 486 *WHO Expert Committee on Biological Standardization*, twenty-fourth report (R)
- 488 *Evaluation of Food Additives*, fifteenth report of the Joint FAO/WHO Expert Committee on Food Additives (R)
- 503 *Nutritional Anaemias*, report of a WHO Group of Experts (R)
- 512 *Viral Hepatitis*, report of a WHO Scientific Group (R)

- 515 *Schistosomiasis Control*, report of a WHO Expert Committee (R)
- 516 *Youth and Drugs*, report of a WHO Study Group (R)
- 517 *Reuse of Effluents: Methods of Wastewater Treatment and Health Safeguards*, report of a WHO Meeting of Experts (S)
- 518 *The Prevention of Blindness*, report of a WHO Study Group (R)
- 519 *Cell-mediated Immunity and Resistance to Infection*, report of a WHO Scientific Group (R)
- 522 *Energy and Protein Requirements*, report of a Joint FAO/WHO Ad Hoc Expert Committee (R, S)
- 525 *Pesticides Residues in Food*, report of the 1972 Joint FAO/WHO Meeting (S)
- 526 *WHO Expert Committee on Drug Dependence*, nineteenth report (R, S)
- 527 *Advances in Methods of Fertility Regulation*, report of a WHO Scientific Group (S)
- 528 *Evaluation of Environmental Health Programmes*, report of a WHO Scientific Group (S)
- 529 *Chemotherapy of Malaria and Resistance to Antimalarials*, report of a WHO Scientific Group (S)
- 530 *WHO Expert Committee on Biological Standardization*, twenty-first report (S)
- 531 *The Use of Viruses for the Control of Insect Pests and Disease Vectors*, report of a Joint FAO/WHO Meeting on Insect Viruses (S)
- 532 *Trace Elements in Human Nutrition*, report of a WHO Expert Committee (S)
- 533 *Postgraduate Education and Training in Public Health*, report of a WHO Expert Committee (S)
- 534 *Continuing Education for Physicians*, report of a WHO Expert Committee (S)
- 535 *Environmental and Health Monitoring in Occupational Health*, report of a WHO Expert Committee (S)
- 536 *Bioavailability of Drugs: Principles and Problems*, report of a WHO Scientific Group (E, F, S)
- 537 *Malaria Control in Countries Where Time-Limited Eradication is Impracticable at Present*, report of a WHO Inter-regional Conference (E, F, S)
- 538 *The Selection of Teaching/Learning Materials in Health Sciences Education*, report of a WHO Study Group (E, F, S)
- 539 *Toxicological Evaluation of Certain Food Additives with a Review of General Principles and of Specifications*, seventeenth report of the Joint FAO/WHO Expert Committee on Food Additives (E, F, S)
- 540 *Maturation of Fetal Body Systems*, report of a WHO Scientific Group (E, F, S)
- 541 *Disposal of Community Wastewater*, report of a WHO Expert Committee (E, F)
- 542 *WHO Expert Committee on Filariasis*, third report (E, F, S)

¹ The language of issue is denoted as follows: C = Chinese; E = English; F = French; P = Portuguese; R = Russian; S = Spanish; E-F = English and French; E-S = English and Spanish; E/F, E/S = bilingual edition.

- 543 *Food-borne Disease: Methods of Sampling and Examination in Surveillance Programmes*, report of a WHO Study Group (E, F, S)
- 544 *Uses of Epidemiology in Housing Programmes and in Planning Human Settlements*, report of a WHO Expert Committee on Housing and Health (E, F, S)
- 545 *Pesticide Residues in Food*, report of the 1973 Joint FAO/WHO Meeting (E, F)
- 546 *Assessment of the Carcinogenicity and Mutagenicity of Chemicals*, report of a WHO Scientific Group (E, F, S)
- 547 *The Planning of Medical Education Programmes*, report of a WHO Expert Committee (E, F, S)
- 548 *Planning and Organization of Geriatric Services*, report of a WHO Expert Committee (E, F, S)
- 549 *WHO Expert Committee on Malaria*, sixteenth report (E, F)
- 550 *Fish and Shellfish Hygiene*, report of a WHO Expert Committee convened in cooperation with FAO (E, F)
- 551 *WHO Expert Committee on Drug Dependence*, twentieth report (E, F, S)
- 552 *WHO Expert Committee on Tuberculosis*, ninth report (E, F, S)
- 553 *Ecology and Control of Rodents of Public Health Importance*, report of a WHO Scientific Group (E, F)
- 554 *Health Aspects of Environmental Pollution Control: Planning and Implementation of National Programmes*, report of a WHO Expert Committee (E, F)
- 555 *The Use of Mercury and Alternative Compounds as Seed Dressings*, report of a Joint FAO/WHO Meeting (E, F)
- 556 *Detection of Dependence-Producing Drugs in Body Fluids*, report of a WHO Meeting of Investigators (E, F)
- 557 *Evaluation of Certain Food Additives*, eighteenth report of the Joint FAO/WHO Expert Committee on Food Additives (E, F)
- 558 *Community health nursing*, report of a WHO Expert Committee (E, F)
- 559 *New Approaches in Health Statistics*, report of Second International Conference of National Committees on Vital and Health Statistics (E, F)

OFFICIAL RECORDS SERIES

- 193 *Twenty-fourth World Health Assembly*
Part I—Resolutions and Decisions, Annexes (R)
- 198 *Executive Board, Forty-ninth Session*
Part I—Resolutions, Annexes (R)
- 199 *Executive Board, Forty-ninth Session*
Part II—Report on the Proposed Programme and Budget Estimates for 1973 (R)
- 202 *Twenty-fifth World Health Assembly*
Part II—Plenary Meetings: Verbatim Records. Committees: Summary Records and Reports (R)
- 208 *Financial Report, 1 January-31 December 1972, and Reports of the External Auditor* (R)
- 212 *Proposed Programme and Budget Estimates for 1975* (R)
- 213 *The Work of WHO, 1973*
Annual Report of the Director-General (E, F, R, S)
- 214 *Financial Report, 1 January-31 December 1973, and Reports of the External Auditor* (E, F, S)
- 215 *Executive Board, Fifty-third Session*
Part I—Resolutions, Annexes (E, F, S)
- 216 *Executive Board, Fifty-third Session*
Part II—Report on the Proposed Programme and Budget Estimates for 1975 (E, F, S)
- 217 *Twenty-seventh World Health Assembly*
Part I—Resolutions and Decisions, Annexes (E, F, S)
- 218 *Twenty-seventh World Health Assembly*
Part II—Verbatim Records of Plenary Meetings, Summary Records and Reports of Committees (E, F, S)
- 219 *Executive Board, Fifty-fourth Session* (E, F, S)
- 220 *Proposed Programme Budget for the Financial Years 1976 and 1977* (E, F, S)

Handbook of Resolutions and Decisions, Volume I: 1948-1972 (R)
Basic Documents, twenty-fourth edition (E, F, S)

OTHER PUBLICATIONS

Offset Publication Series

- 1 *Manual on Larval Control Operations in Malaria Programmes* (F)
- 3 *Therapeutic Effectiveness of Methadone Maintenance Programs in the Management of Drug Dependence of Morphine Type in the USA*, by Stephen S. Wilmarth & Avram Goldstein (E, F)
- 4 *Plastic Containers for Pharmaceuticals. Testing and Control*, by J. Cooper (E, F)
- 5 *Trace Elements in Relation to Cardiovascular Diseases*, edited by R. Masironi (E, F)
- 6 *Problems and Programmes Related to Alcohol and Drug Dependence in 33 Countries*, by Joy Moser (E, F)
- 7 *Health Education: A Programme Review. A Report by the Director-General of the World Health Organization to the Fifty-third Session of the Executive Board* (E, F)
- 8 *The Current and Future Use of Registers in Health Information Systems*, by Eileen M. Brooke (E, F)
- 9 *Cost and Benefit of Fluoride in the Prevention of Dental Caries*, by G. N. Davies (E)
- 10 *Manual on Personal and Community Protection against Malaria in Development Areas and New Settlements* (E)
- 11 *Manuel de Chimie de l'Environnement*, by Stevan Jankovic (F)
- 12 *Health Project Management: A Manual of Procedures for Formulating and Implementing Health Projects*, by J. Bainbridge & S. Sapirie (E)

International Histological Classification of Tumours

- 3 *Histological Typing of Soft Tissue Tumours*, by F. M. Enzinger in collaboration with R. Lattes & H. Torloni (R)
- 4 *Histological Typing of Oral and Oropharyngeal Tumours*, by P. N. Wahi in collaboration with B. Cohen, Usha K. Luthra & H. Torloni (R)
- 10 *Histological Typing of Urinary Bladder Tumours*, by F. K. Mostofi in collaboration with L. H. Sobin & H. Torloni (F, S)
- 11 *Histological Typing of Thyroid Tumours*, by Chr. Hedinger in collaboration with L. H. Sobin (E, F, S)
- 12 *Histological Typing of Skin Tumours*, by R. E. J. ten Seldam & E. B. Helwig in collaboration with L. H. Sobin & H. Torloni (E)

WHO Pesticide Residues Series

- 1 1971 Evaluations of Some Pesticide Residues in Food (F)
- 2 1972 Evaluations of Some Pesticide Residues in Food (E)

WHO Food Additives Series

- 4 Evaluation of Mercury, Lead, Cadmium and the Food Additives Amaranth, Diethylpyrocabonate, and Octyl Gallate (F)
- 5 Toxicological Evaluation of Some Food Additives including Anticaking Agents, Antimicrobials, Antioxidants, Emulsifiers and Thickening Agents (E)

Introduction to Ergonomics, by W. T. Singleton (F)

Specifications for Pesticides Used in Public Health, fourth edition (F, S)

Drug Treatment in Intestinal Helminthiases, by A. Davis (F)

Slow Sand Filtration, by L. Huisman & W. E. Wood (E)

La Réglementation sanitaire internationale. Guide pratique, by P. Delon (F)

Field Methods for the Control of Trachoma, edited by M. L. Tarizzo (F)

Guidelines for the Laboratory Diagnosis of Cholera, prepared by the WHO Bacterial Diseases Unit (E, F, S)

Onchocerciasis. Symptomatology, Pathology, Diagnosis, edited by A. A. Buck (E, F)

Manual on Radiation Protection in Hospitals and General Practice. Volume I: Basic Protection Requirements, by C. B. Braestrup & K. J. Vikterlöf (E)

Equipment for Vector Control, second edition (E)

Glossary of Mental Disorders and Guide to their Classification, for use in conjunction with the International Classification of Diseases, 8th Revision (E)

World Directory of Schools for Animal Health Assistants, 1971 (E)

World Directory of Veterinary Schools, 1971 (F)

Publications of the World Health Organization 1968-1972. A Bibliography (E, F)

International Health Regulations (1969), second annotated edition (E, F, S)

Vector Control in International Health (R)

Intensive Coronary Care, by M. F. Oliver, D. G. Julian & Myra G. Brown (E)

PERIODICALS

World Health

Monthly (E, F, P, R, S)

WHO Chronicle

Volume 27, No. 9-12 (R)

Volume 28, No. 1-12 (E, F, S)

Volume 28, No. 1-9 (R)

Bulletin of the World Health Organization

Volume 48, No. 1-6 (R)

Volume 49, No. 1-3 (R)

Volume 48, No. 6 (E-F)

Volume 49, No. 1-6 (E-F)

Volume 50, No. 1-6 (E-F)

International Digest of Health Legislation

Volume 24, No. 4 (E, F)

Volume 25, No. 1-3 (E, F)

World Health Statistics Report

Volume 26, No. 12 (E/F)

Volume 27, No. 1-11 (E/F)

World Health Statistics Annual

1967—Volumes II and III (R)

1970—Volumes II and III (E/F)

1971—Volume I (E/F)

TRANSLATED WHO PUBLICATIONS ISSUED BY OTHER PUBLISHERS IN 1974¹

	Language		Language
<i>Public Health Papers</i>		499 <i>Organization of Local and Intermediate Health Administrations</i> , report of a WHO Expert Committee	Japanese
42 <i>The Prevention of Perinatal Morbidity and Mortality</i> , report on a seminar	Polish	507 <i>Psychogeriatrics</i> , report of a WHO Scientific Group	Japanese
46 <i>Approaches to National Health Planning</i> , by H. E. Hilleboe, A. Barkhuus & W. C. Thomas, Jr	Japanese	510 <i>Statistical Principles in Public Health Field Studies</i> , fifteenth report of the WHO Expert Committee on Health Statistics	Japanese
48 <i>Evaluation of Community Health Centres</i> , by Milton I. Roemer	Indonesian	519 <i>Cell-Mediated Immunity and Resistance to Infection</i> , report of a WHO Scientific Group	Japanese
<i>Technical Report Series</i>		522 <i>Energy and Protein Requirements</i> , report of a Joint FAO/WHO Ad Hoc Expert Committee	Japanese
428 <i>The Organization and Administration of Maternal and Child Health Services</i> , fifth report of the WHO Expert Committee on Maternal and Child Health	Arabic	536 <i>Bioavailability of Drugs: Principles and Problems</i> , report of a WHO Scientific Group	Japanese
432 <i>Research in Health Education</i> , report of a WHO Scientific Group	Indonesian	552 <i>WHO Expert Committee on Tuberculosis</i> , ninth report	Japanese
448 <i>Factors Regulating the Immune Response</i> , report of a WHO Scientific Group	Czech		
484 <i>Solid Wastes Disposal and Control</i> , report of a WHO Expert Committee	Japanese		
493 <i>WHO Expert Committee on Smallpox Eradication</i> , second report	Japanese		

¹ Publications translated and issued by publishers to whom translation rights had been granted by WHO. The Organization does not accept responsibility for these translations or undertake their distribution.

	Language		Language
<i>Other Publications</i>		L. Kreyberg, in collaboration with A. A. Liebow & E. A. Uehlinger (excerpts only)	Turkish
<i>International Standards for Drinking-Water</i>	Portuguese	<i>Dictionary of Epilepsy, Part I: Definitions</i> , by H. Gastaut in collaboration with an international group of experts	Japanese
<i>International Histological Classification of Tumours</i> No. 1 <i>Histological Typing of Lung Tumours</i> , by			

PUBLICATIONS ISSUED BY THE PAN AMERICAN HEALTH ORGANIZATION IN 1974

SCIENTIFIC PUBLICATIONS SERIES

- 276 *Manual for the Microscopic Diagnosis of Malaria* (P, S)
- 279 *Pan American Conference on Health Manpower Planning* (E, F, S)
- 280 *Venereal Disease—Report on the International Travelling Seminar in the United States of America* (E, S)
- 281 *VI Inter-American Meeting on Foot-and-Mouth Disease and Zoonoses Control* (E, S)
- 282 *Grupo de Estudio sobre la Formación del Psiquiatra* (S)
- 283 *Simposio sobre Disentería Shiga en Centroamérica* (S)
- 284 *Manual de nomenclatura y codificación de tumores* (S)
- 285 *Guía para investigaciones sobre el desarrollo de la enfermería en América Latina* (S)
- 286 *Facts on Health Progress, 1973* (E, S)
- 287 *Health Conditions in the Americas, 1969-1972* (E, S)
- 288 *Sistemas de vigilancia epidemiológica de las enfermedades transmisibles y zoonosis* (S)
- 289 *Sistemas de salud comunitarios y participación de la comunidad* (Discusiones Técnicas de la XXII Reunión del Consejo Directivo de la OPS) (S)
- 290 *Guía para la organización de servicios de salud en áreas rurales y la utilización de personal auxiliar* (S)
- 291 *Seminar on Nursing-Midwifery Aspects of Maternal and Child Health and Family Planning* (E, S)
- 292 *Endemic Goiter and Cretinism: Continuing Threats to World Health* (E)

- 293 *Seminario sobre la Organización de Servicios para el Retrasado Mental* (S)

OFFICIAL DOCUMENTS SERIES

- 127 *Final Report, XXII Meeting of the Directing Council of PAHO, XXV Meeting of the Regional Committee of WHO for the Americas* (E/S)
- 128 *Financial Report of the Director and Report of the External Auditor, 1973* (E, S)
- 129 *Proposed Program and Budget Estimates—Pan American Health Organization, 1975; World Health Organization, Region of the Americas, 1976; Pan American Health Organization, Provisional Draft, 1976* (E, S)
- 131 *Report of the Director—Quadriennial, 1970-1973; and Annual, 1973* (E, S)
- 132 *Executive Committee of the Pan American Health Organization, 71st and 72nd Meetings—Final Reports and Précis Minutes* (E-S)

OTHER PUBLICATIONS

- Dengue Newsletter for the Americas* (E, S)
- Programa de adiestramiento, 1974—Programa Panamericano de Planificación de la Salud* (S)
- PAHO Research Grants for Investigators* (E, S)
- Research in Progress, 1974* (E)
- Noticiero—Programa de libros de texto* (P, S)

PUBLICATIONS OF THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER IN 1974

- Host Environment Interactions in the Etiology of Cancer in Man*, edited by R. Doll & I. Vodopija (IARC Scientific Publications No. 7) (E)
- Biological Effects of Asbestos*, edited by P. Bogovski, J. C. Gilson,

- V. Timbrell & J. C. Wagner (IARC Scientific Publications No. 8) (E)
- Chemical Carcinogenesis Essays*, edited by R. Montesano & L. Tomatis (IARC Scientific Publications No. 10) (E)

WHO LIBRARY STATISTICS, 1974

Acquisitions		Borrowed from other libraries	2 611
Periodicals received	3 153	Periodicals circulated to WHO secretariat	80 051
by subscription	879	Photocopying (number of exposures)	252 533
by exchange with WHO publications	1 401	Items consulted in reading rooms	73 572
by gift	873		
Annual reports received	1 490	Medical literature supply	
Books and pamphlets ordered	1 092	Orders placed for:	
Books and pamphlets received	2 646	Headquarters secretariat (number)	783
Volumes bound	682	(items)	2 042
		Regional Offices (number)	2 103
Catalogue		(items)	12 704
Titles catalogued	1 902	Duplicates distributed to Regional Offices and to other	
Documents indexed	4 191	libraries	13 605
Index cards filed	46 077		
		WHO MEDLINE Centre	
Loans		Retrospective MEDLARS searches	14
Lent to WHO secretariat	10 610	Retrospective MEDLINE searches	1 440
Lent to other libraries	4 774	Current awareness bibliographies	1 420

International	Brain Research Organization
International	Commission on Radiation Units and Measurements
International	Commission on Radiological Protection
International	Committee of Catholic Nurses
International	Committee on Laboratory Animals
International	Committee of the Red Cross
International	Confederation of Midwives
International	Council on Alcohol and Addictions
International	Council on Jewish Social and Welfare Services
International	Council of Nurses
International	Council of Scientific Unions
International	Council on Social Welfare
International	Council of Societies of Pathology
International	Cystic Fibrosis (Mucoviscidosis) Association
International	Dental Federation

International Diabetes Federation	International Union against Cancer
International Electrotechnical Commission	International Union for Child Welfare
International Epidemiological Association	International Union for Conservation of Nature and Natural Resources
International Ergonomics Association	International Union for Health Education
International Federation of Fertility Societies	International Union of Immunological Societies
International Federation of Gynecology and Obstetrics	International Union of Local Authorities
International Federation for Housing and Planning	International Union of Nutritional Sciences
International Federation for Information Processing	International Union of Pharmacology
International Federation for Medical and Biological Engineering	International Union of Pure and Applied Chemistry
International Federation of Medical Student Associations	International Union of School and University Health and Medicine
International Federation of Multiple Sclerosis Societies	International Union against Tuberculosis
International Federation of Ophthalmological Societies	International Union against the Venereal Diseases and the Treponematoses
International Federation of Pharmaceutical Manufacturers Associations	International Water Supply Association
International Federation of Physical Medicine and Rehabilitation	Joint Commission on International Aspects of Mental Retardation
International Federation of Sports Medicine	League of Red Cross Societies
International Federation of Surgical Colleges	Medical Women's International Association
International Hospital Federation	Permanent Commission and International Association on Occupational Health
International Hydatidological Association	Population Council
International League of Dermatological Societies	Transplantation Society
International League against Epilepsy	World Association of Societies of (Anatomic and Clinical) Pathology
International League against Rheumatism	World Confederation for Physical Therapy
International Leprosy Association	World Council for the Welfare of the Blind
International Organization for Standardization	World Federation of the Deaf
International Organization against Trachoma	World Federation of Hemophilia
International Paediatric Association	World Federation for Medical Education
International Pharmaceutical Federation	World Federation for Mental Health
International Planned Parenthood Federation	World Federation of Neurology
International Radiation Protection Association	World Federation of Neurosurgical Societies
International Society of Biometeorology	World Federation of Occupational Therapists
International Society of Blood Transfusion	World Federation of Parasitologists
International Society for Burn Injuries	World Federation of Public Health Associations
International Society of Cardiology	World Federation of Societies of Anaesthesiologists
International Society of Endocrinology	World Federation of United Nations Associations
International Society of Hematology	World Medical Association
International Society of Orthopaedic Surgery and Traumatology	World Psychiatric Association
International Society of Radiographers and Radiological Technicians	World Veterans Federation
International Society of Radiology	World Veterinary Association
International Society for Rehabilitation of the Disabled	
International Sociological Association	
International Solid Wastes and Public Cleansing Association	
International Union of Architects	
International Union of Biological Sciences	

Annex 11

REGULAR BUDGET FOR 1974

<i>Appropriation section</i>	<i>Purpose of appropriation</i>	<i>Amount approved</i> ¹	<i>Supplementary estimates</i> ²	<i>Transfers: ³ increase (decrease)</i>	<i>Revised appropriation</i>
		US \$	US \$	US \$	US \$
PART I: ORGANIZATIONAL MEETINGS					
1.	World Health Assembly	744 050	—	31 100	775 150
2.	Executive Board and its committees	432 130	—	—	432 130
3.	Regional committees	147 300	—	—	147 300
	Total — Part I	1 323 480	—	31 100	1 354 580
PART II. OPERATING PROGRAMME					
4.	Communicable diseases	19 378 196	546 000	(386 500)	19 537 696
5.	Environmental health	9 178 680	211 900	(374 860)	9 015 720
6.	Strengthening of health services	25 914 060	913 200	(149 700)	26 677 560
7.	Noncommunicable diseases	4 140 297	68 100	(101 080)	4 107 317
8.	Health manpower development	11 260 101	170 900	223 140	11 654 141
9.	Other activities	16 733 832	196 300	508 900	17 439 032
10.	Regional offices	8 895 947	261 300	225 200	9 382 447
	Total — Part II	95 501 113	2 367 700	(54 900)	97 813 913
PART III. ADMINISTRATIVE SERVICES					
11.	Administrative services	8 834 007	103 300	(44 000)	8 893 307
	Total — Part III	8 834 007	103 300	(44 000)	8 893 307
PART IV. OTHER PURPOSES					
12.	Headquarters building: Repayment of loans	670 200	—	67 800	738 000
	Total — Part IV	670 200	—	67 800	738 000
	EFFECTIVE WORKING BUDGET (PARTS I, II, III AND IV)	106 328 800	2 471 700	—	108 799 800

¹ See resolutions WHA26.41, EB53.R10 and EB54.R9.² Approved by the Twenty-seventh World Health Assembly in resolution WHA27.4.³ Subject to such additional transfers as may be necessary in conjunction with the closure and audit of the final accounts for 1974.

Annex 12

NUMBERS AND DISTRIBUTION OF THE STAFF ¹
at 30 November 1973 and 30 November 1974

Distribution	Staff as at 30 November 1973					Staff as at 30 November 1974				
	Total	Regular Budget	Voluntary Funds	Other sources	IARC	Total	Regular Budget	Voluntary Funds	Other sources	IARC
Headquarters ²										
Internationally recruited	483					497				
Locally recruited	727					745				
	1 210	1 113	28	69	—	1 242	1 138	35	69	—
Regional offices										
<i>Africa</i>										
Internationally recruited	60					63				
Locally recruited	258					262				
	318	318	—	—	—	325	325	—	—	—
<i>The Americas</i>										
Internationally recruited	31					31				
Locally recruited	54					51				
	85	85	—	—	—	82	82	—	—	—
<i>South-East Asia</i>										
Internationally recruited	33					39				
Locally recruited	160					170				
	193	190	—	3	—	209	205	—	4	—
<i>Europe</i>										
Internationally recruited	55					51				
Locally recruited	130					127				
	185	185	—	—	—	178	178	—	—	—
<i>Eastern Mediterranean</i>										
Internationally recruited	38					40				
Locally recruited	110					111				
	148	146	—	2	—	151	149	—	2	—
<i>Western Pacific</i>										
Internationally recruited	35					38				
Locally recruited	104					110				
	139	137	—	2	—	148	143	—	5	—

¹ Excluding short-term consultants.² Including liaison offices.

Annex 12 (continued)

Distribution	Staff as at 30 November 1973					Staff as at 30 November 1974				
	Total	Regular Budget	Voluntary Funds	Other sources	IARC	Total	Regular Budget	Voluntary Funds	Other sources	IARC
WHO representatives' and zone offices										
Internationally recruited	41					48				
Locally recruited	124					139				
	165	165	—	—	—	187	187	—	—	—
Field staff in countries										
Internationally recruited	951					957				
Locally recruited	98					175				
	1 049	746	2	301	—	1 132	773	8	351 ¹	—
International Agency for Research on Cancer										
Internationally recruited	35					37				
Locally recruited	87					91				
	122	—	—	—	122	128	—	—	—	128
Interregional and other activities										
Internationally recruited	124					115				
Locally recruited	31					36				
	155	111	15	29	—	151	96	18	37	—
	3 769	3 196	45	406	122	3 933	3 276	61	468	128
Staff on loan to WHO, or on leave without pay	42					43				
Staff seconded to other organizations . .	2					4				
WHO GRAND TOTAL	3 813					3 980				
PAHO GRAND TOTAL	1 190					1 252				

¹ Including 61 staff members (17 internationally recruited and 44 locally recruited) assigned to the onchocerciasis control programme in the Volta river basin area on fixed-term contracts of a duration of a year or more.

Annex 13
COMPOSITION OF THE STAFF BY NATIONALITY
at 30 November 1974

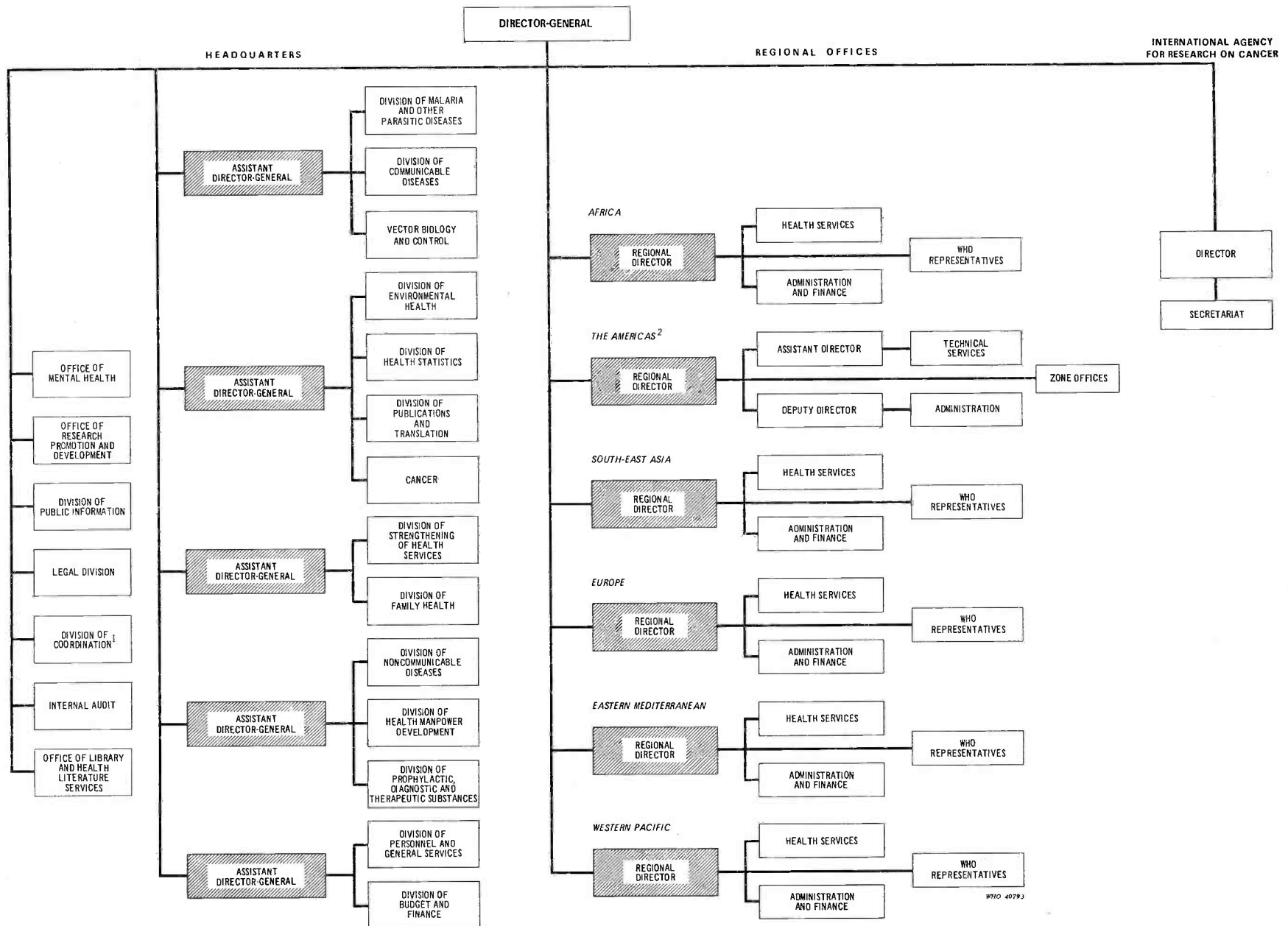
Country	WHO	PAHO	Total
Afghanistan	4	—	4
Argentina	26	35	61
Australia	30	—	30
Austria	13	—	13
Bangladesh	5	—	5
Barbados	2	—	2
Belgium	38	1	39
Bolivia	9	12	21
Brazil	16	23	39
Bulgaria	6	—	6
Burma	3	—	3
Burundi	2	—	2
Canada	64	7	71
Central African Republic . .	1	—	1
Chile	21	45	66
China	21	3	24
Colombia	20	37	57
Congo	3	—	3
Costa Rica	3	13	16
Cuba	2	1	3
Cyprus	4	—	4
Czechoslovakia	18	—	18
Dahomey	13	—	13
Democratic Yemen	1	—	1
Denmark	26	—	26
Dominican Republic	1	2	3
Ecuador	10	12	22
Egypt	43	—	43
El Salvador	2	9	11
Ethiopia	2	—	2
Finland	10	—	10
France	138	1	139
Gambia	2	—	2
German Democratic Republic .	1	—	1
Germany, Federal Republic of	47	1	48
Ghana	10	—	10
Greece	12	—	12
Guatemala	4	32	36
Guyana	—	1	1
Haiti	13	1	14
Honduras	2	5	7
Hungary	7	—	7
India	66	2	68
Indonesia	7	—	7
Iran	10	—	10
Iraq	4	—	4
Ireland	11	1	12
Israel	7	1	8
Italy	46	—	46
Ivory Coast	1	—	1
Jamaica	6	3	9
Japan	15	—	15
Jordan	14	—	14
Kenya	2	—	2
Lebanon	16	—	16
Lesotho	1	—	1
Liberia	3	—	3
Luxembourg	1	—	1
Madagascar	2	—	2
Malaysia	6	—	6
Mali	3	—	3

Country	WHO	PAHO	Total
Malta	4	—	4
Mauritius	11	—	11
Mexico	6	14	20
Morocco	1	—	1
Nepal	5	—	5
Netherlands	32	1	33
New Zealand	12	—	12
Nicaragua	1	4	5
Niger	1	—	1
Nigeria	14	—	14
Norway	10	1	11
Pakistan	22	—	22
Panama	3	2	5
Paraguay	3	4	7
Peru	17	30	47
Philippines	24	1	25
Poland	28	—	28
Portugal	3	3	6
Republic of Korea	15	—	15
Romania	12	—	12
Senegal	7	—	7
Sierra Leone	5	—	5
Singapore	3	—	3
Somalia	2	—	2
South Africa	1	—	1
Spain	21	10	31
Sri Lanka	19	—	19
Sudan	13	—	13
Sweden	28	—	28
Switzerland	48	—	48
Syrian Arab Republic	12	—	12
Thailand	8	—	8
Togo	9	—	9
Trinidad and Tobago	4	3	7
Tunisia	6	1	7
Turkey	6	—	6
Union of Soviet Socialist Republics	37	—	37
United Kingdom of Great Britain and Northern Ireland	175	12	187
United Republic of Cameroon	4	—	4
United Republic of Tanzania .	6	—	6
United States of America . . .	212	96	308
Upper Volta	1	—	1
Uruguay	9	10	19
Venezuela	3	7	10
Viet-Nam	6	—	6
Yemen	1	—	1
Yugoslavia	39	—	39
Zambia	1	—	1
Stateless	1	—	1
TOTAL	1 787	447	2 234
International Agency for Research on Cancer	38	—	38
Geographically excepted posts .	124	—	124
Staff locally recruited	2 027	805	2 832
Staff on secondment to other organizations	4	—	4
GRAND TOTAL	3 980	1 252	5 232

Annex 14

STRUCTURE OF THE WORLD HEALTH ORGANIZATION AT 1 JANUARY 1975

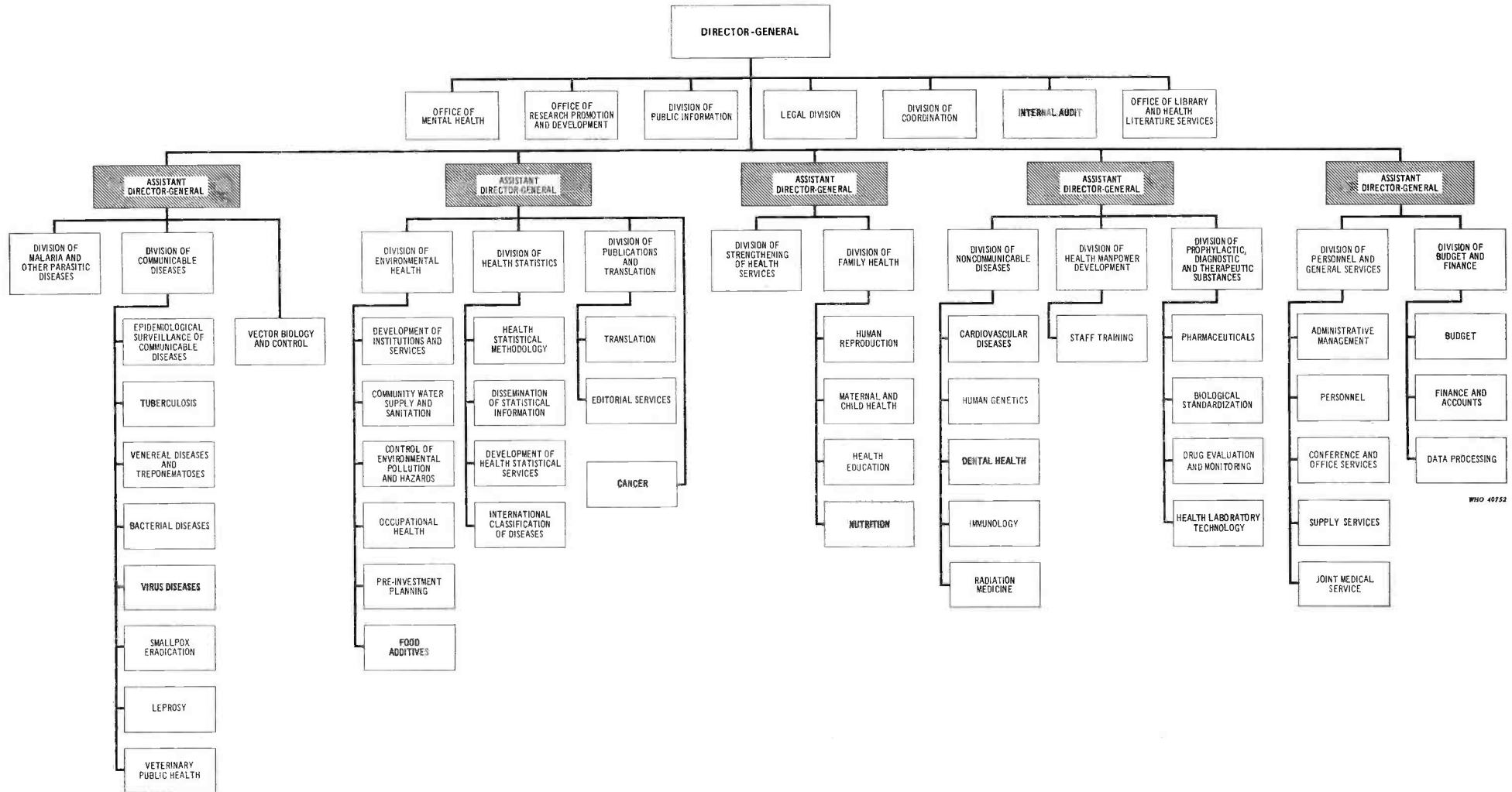
WHO SECRETARIAT AS A WHOLE



¹ The liaison offices with United Nations, ECA, ESCAP and IAEA, the WHO medical advisers to UNICEF (who are also responsible for liaison with UNFPA), and the WHO representative with UNRWA report to the Division of Coordination.

² Regional Office for the Americas/Pan American Sanitary Bureau.

WHO HEADQUARTERS SECRETARIAT





THE WORK OF WHO, 1974

ANNUAL REPORT OF THE DIRECTOR-GENERAL

TO THE

WORLD HEALTH ASSEMBLY AND TO THE UNITED NATIONS

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1975

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